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## BOTULISM FROM EATING CANNED RIPE OLIVES.[1]

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### INTRODUCTION.

Cases of poisoning now recognized as botulism have been reported from time to time since as early as 1735; and from this time to the present, outbreaks of botulism have been recorded with increasing frequency. No historical review or survey of the now fairly extensive literature is here attempted. Those interested in this feature of the matter are referred to Dickson's Monograph, No. 8, Rockefeller Institute for Medical Research.

From 1910 to 1916, inclusive, 3,916 deaths from food poisoning were recorded in the registration area of the United States. There is, thus, for this period, an estimate of 874 deaths annually among the population of the United States due to food poisoning. Just what proportion of these deaths is due to botulism is, of course, unknown; but when the difficulty of diagnosis is remembered, together with the frequent report of deaths from "ptomaine," it is likely that botulism in America is more common than the reports would indicate.

The *Bacillus botulinus* was first isolated by von Ermengem in 1894, from ham, and his observations have been confirmed by various writers. (See Dickson's Monograph.) Further significance has recently been given to *Bacillus botulinus* in this country by Graham and Brueckner, who isolated an organism from ensilage and from oat hay which had caused outbreaks of forage poisoning in horses and mules. This organism seems to be a strain of *Bacillus botulinus*.[2] Forage poisoning is said to have caused in 1912 the death of 20,000 mules in Kansas, Missouri, and Nebraska, and sporadic outbreaks have occurred from time to time in Kentucky, Illinois, and other States.[3]

*Bacillus botulinus* has been found in nature in oat hay, ensilage, and in the intestinal contents of a normal pig, by Kemper and Pollack.[4] In Europe, botulism has been most frequent in Germany, and

[1] From the State department of health, Columbus, Ohio.
[2] Graham and Brueckner, Jour. Bacteriology, January, 1919.
[3] Idem.
[4] Deutsch. Med. Woch. 1897, XXIII, 505.

usually has followed the use of poorly cooked meats—sausage, ham, etc. The well known outbreak at Dernstadt reported by Landmann is an exception, having been caused by canned white beans. In America, however, botulism has most often been associated with the use of home-canned fruits and vegetables. It is of interest to note that of 64 cases recorded by Dickson in the United States during the past 25 years, 54 occurred in California. The outbreak described in this article was due to eating California packed fruit. This outbreak is contrary to the experience of Weinzirl [1] in that it was caused by commercial canned goods. This is especially disturbing, as one can hardly fail to appreciate the possibility of many jars being infected at the same pack, and of the organism being sent broadcast over the country with its attending hazards.[2] It would appear, moreover, that olives are especially dangerous, since they are usually served without cooking, a process which destroys the toxin of *Bacillus botulinus*.

Canned pears, string beans, white beans, asparagus, peas, corn, apricots, spinach, artichokes, and peaches have been known to either produce cases of botulism or to have permitted the growth of *Bacillus botulinus* and toxin development experimentally.

## STUDY OF OUTBREAK FROM EATING RIPE OLIVES.

The outbreak of poisoning here considered developed in a group of people who were in attendance at a banquet held on the evening of August 23, 1919, at a country club near Canton, Ohio. There were present at this banquet about 200 people from Canton and the surrounding towns.

Following the dinner 14 cases of poisoning occurred—11 among guests and 3 among the employees at the club. Five guests and 2 employees died. The guests who became ill were all members of a party given by Mrs. I. W. G., of Sebring, Ohio, and had been served at a separate table which shall hereafter be designated as the Sebring table. The two waiters who attended this table and the chef were also affected.

### The Menu.

The following foods were served at the banquet:

| | |
|---|---|
| Canteloupe | Green olives, celery, and pickles |
| Turkey | Rolls |
| Turkey stuffing | Butter |
| Tomatoes and mayonnaise | Ice cream |
| Crackers | Cake |
| Scalloped corn and pimentoes | Water |
| Browned potatoes | Coffee. |

[1] Jour. Medical Research, January, 1919.

[2] Since this paper was written an outbreak of poisoning near Detroit, Mich., has come to our attention. In this outbreak there were 5 deaths attributed to botulism from the eating of ripe olives of the same brand found responsible for the poisoning herein described.

The Sebring table was served, in addition to the above, with ripe olives, chocolate candy, Newport creams, and candied almonds, all of which were furnished by the hostess. The green olives, celery, and pickles were not served at this table.

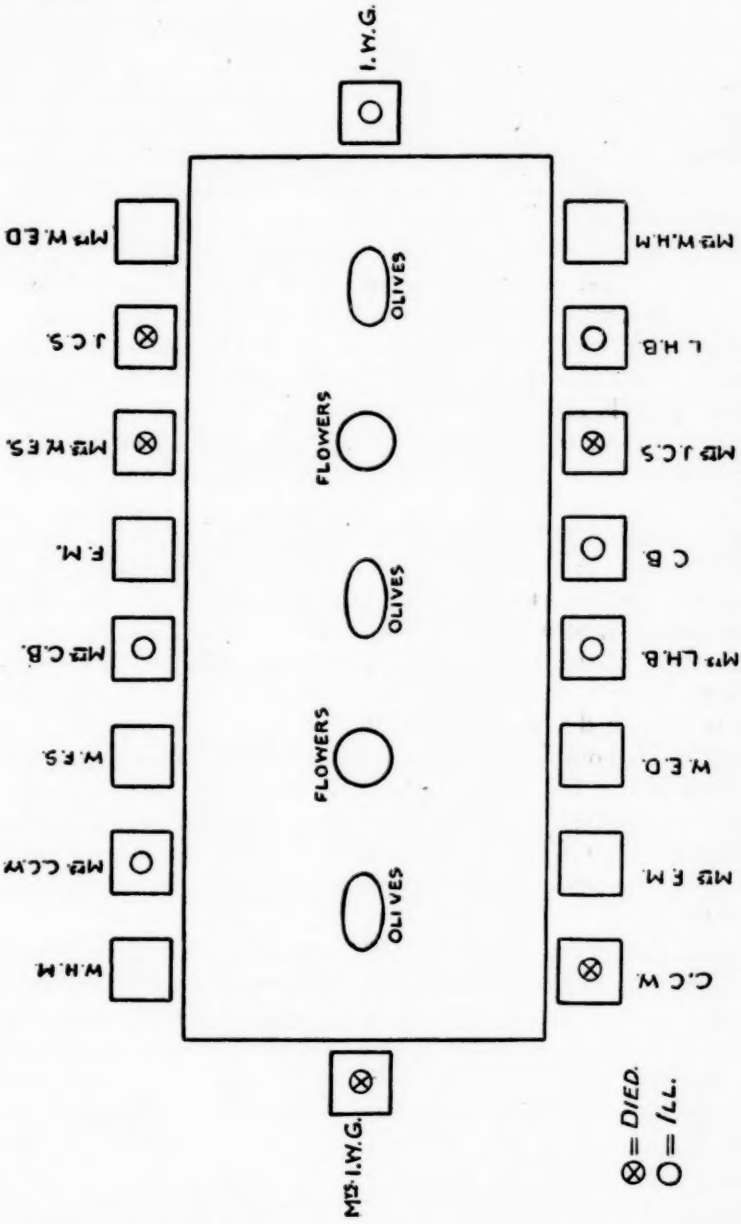


Fig. 1.—Seating and table arrangement at the Sebring table.

Soft drinks were dispensed at the grill downstairs, and a few persons had partaken of alcoholic beverages from their individual stocks.

The symptoms of those affected were so similar as to point to a common cause; and since those affected had had no other meetings, food, or drinks in common, and since no other foods were served, it would seem that the toxic substance was something in the above-mentioned menu, and something restricted to the Sebring table.

### The Epidemiological Investigation.

The investigation was begun on August 29, seven days after the banquet, and after 6 of the cases had terminated fatally. Each member of the Sebring party and each of the club employees, excepting the fatal cases, was interviewed to ascertain whether or not he had partaken of the various articles served at the banquet.

Some 15 people from various parties, other than the party at the Sebring table, were interviewed, and the bill of fare as served at their various tables was found to be identical with that served at the Sebring table, excepting that green olives, celery, and pickles were served in place of the ripe olives, candy, and nuts, which were furnished especially by Mrs. I. W. G. for her guests. No illness occurred among the banqueters from the other tables.

In the attempt to learn what foods people had or had not eaten at the banquet, only definite information was recorded. All such answers as: "I think I ate it, but not certain," "I like it and probably did," etc., were recorded as doubtful. In the case of the deceased, the only evidence accepted was their own ante mortem statements, or the statements of others at the table who saw them eat this or that article. Evidently the fact that they were not observed to have eaten any particular substance could not be accepted as evidence that they had not done so.

The scene of the banquet was inspected, and the manager and employees were interviewed as to the source of supply, mode of preparation, and serving of the various articles used at the dinner. The epidemiological evidence and other facts which seem of importance will be considered with reference to each article of the menu. (See Table I.)

*Cantaloupe.*—The cantaloupes were the choice ripe fruit selected from 9 cases of melons. Each guest received one-half a melon, and the melons served at the Sebring table were similar to those served to all. The remainder of the 9 cases of melons was eaten later by other persons, and no ill effects followed. Moreover, two persons who were poisoned had not partaken of their melon. It would seem, therefore, that the melons may be excluded from further consideration.

*Turkey.*—The turkeys were cold-storage fowls. Twelve in all were purchased for this dinner, and 9½ were served. The turkeys were "drawn" on August 23, and cooked on the afternoon of that

day. They were carved by two people working at the same table but on separate birds, and the carved portions were placed upon a single large "hot plate" until served. The waiters filed in and received the turkey for their respective tables whenever the dinner at their particular table had reached the meat course. Guests and waiters agree that the Sebring table was neither early nor late, but was served at a time when many tables were being served. Each plate was supplied with light and dark meat and with dressing. Among those interviewed who ate turkey, all agree that no rare meat was served. With the exception of two persons, both of whom were but slightly ill and who thought the meat "a little slimy," all agreed that the turkey was "excellent," saying that they had "never eaten better," "it was tiptop," etc. Since about 200 people were served from 9½ birds, one bird should have supplied about 20 people. Assuming turkey to be the cause of the illness, it would seem reasonable, from the number affected, to conclude that the toxic substance was confined to one, or a portion of one, bird; but when the manner of serving is considered, it seems improbable that the toxic portion should have been delivered to one table only, and still more improbable if we assume the poison to have been from portions of several fowls.

TABLE I.—*Food eaten by members of the Sebring party, and its effect.*

| Club help and guests of the Sebring table. | Effect. | | Food eaten. | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | Ill. | Died. | Melon. | Turkey. | | Turkey stuffing. | Ripe olives. | Tomatoes and mayonnaise. | Corn and pimentoes. | Browned potatoes. | Crackers. | Rolls. | Butter. | Ice cream. | Cake. | Chocolate candy. | Newport creams. | Water. | Almonds. | Coffee. | Soft drinks. |
| | | | | Light. | Dark. | | | | | | | | | | | | | | | | | | | | | | | | | | |
| C. C. W. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| L. W. G. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. J. C. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. C. S. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| W. F. S. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| F. Mc. A. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| R. J. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| C. B. B. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| L. H. B. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| C. O. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. W. G. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| C. C. W. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| C. B. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| W. H. M. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| W. E. D. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| W. E. D. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| W. H. M. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| W. F. S. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| F. M. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| F. M. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. A. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. A. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. J. G. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. F. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| S. R. A. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| A. C. L. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| A. C. M. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| J. C. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| C. R. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |
| H. B. S. | o | o | o | + | + | + | o | + | + | o | + | + | + | + | + | + | + | + | + | + | + |

The banqueters were quite definite in their recollections as to whether or not they had eaten their turkey, their attention having been early directed to turkey as a possible causative agent by the published statements of several physicians who gave it as their opinion that turkey was the cause of the poisoning due to infection with *Bacillus botulinus*. This theory seems improbable, however, in view of the fact that the toxin of *botulinus* is easily destroyed by heat, and all evidence points to the turkey having been well cooked. Furthermore, it was not cold from time of cooking to serving, which at most was a matter of a few hours or minutes.

Among the 14 people showing symptoms, 9 ate both white and dark meat, 1 ate only white meat, and there is doubt in the case of 2 who died. The chef stated before death that he ate no turkey, and the kitchen help at the club testify to this. One other case, a mild one, had eaten no turkey. All of the 7 unaffected diners at the Sebring table ate turkey. Among the 9 unaffected employees at the club, 7 ate turkey. It would seem difficult, therefore, to explain the poisoning on the assumption that it was caused by the turkey.

*Turkey stuffing.*—There appears little need to consider the stuffing independently of the turkey; all but one of the affected who ate turkey also ate dressing, and one who ate no turkey ate of the stuffing. One of those who became ill ate neither turkey nor stuffing.

*Tomatoes and mayonnaise.*—The tomatoes were grown in the club gardens. They were picked on the morning of August 23, the day of the dinner, and were sliced directly into the serving plates about two hours before serving. The mayonnaise was made at the club on August 23, and enough was made in one mixing to serve all. Three of those taken ill ate neither tomatoes nor mayonnaise; 4 of the ill ate both; in 7 there is doubt. Six of the 7 who were not poisoned at the Sebring table ate tomatoes and mayonnaise.

*Corn and pimentoes.*—The corn was grown in the club garden and was picked and cooked on the morning of the dinner. It was cut from the cob and was prepared by mixing it with two cans of pimentoes. The corn and pimentoes were prepared in one pan and at one mixing. It seems apparent, therefore, that any poison in this dish would not have been localized at one table. Four of the 14 who were ill remembered eating their portions; 1 ate none; in 9 cases there is doubt. Among the nonaffected at the Sebring table 5 ate corn and pimentoes, while 2 ate none.

*Browned potatoes.*—The potatoes served were all from the same source, and were prepared in the same kettle and browned in the same pan. Three of those who became ill ate potatoes, 1 ate none, while in the other 10 there is doubt. Potatoes were eaten by 5 of the 7 nonaffected at this table. It seems hardly possible to explain the limitation of the poisoning to one group on the assumption that the cause was in the potatoes.

*Crackers.*—One brand of crackers was served to all. Two of those who became ill ate none; 3 of the ill ate them, and in the case of the other 9 there is doubt. Among the 7 nonaffected diners at the Sebring table all ate crackers. It would seem that crackers need not be considerded further in connection with the poisoning.

*Rolls.*—Rolls from the same source were served to all tables. Two of the ill ate none of them, while 13 of the 16 nonaffected employees and diners of the ill-fated table ate them.

*Butter.*—The butter, in pound packages, was all purchased from one source. Each pound used was divided by a machine into 33 squares for individual serving. It is apparent that a pound of butter, if it contained a toxic substance, should have affected more than 14 persons; and, moreover, it is highly improbable that the whole of any one pound could have reached one table, as the butter dishes were prepared some time before they were served and were taken at random by the waiters. Besides, two persons were ill who ate no butter.

*Ice cream.*—The ice cream for the 200 guests was served from two 5-gallon cans, about half of each can being used. It is apparent, therefore, that if a freezer of infected ice cream was the source of the trouble, more people should have suffered. The remainder of the two freezers of ice cream which was not eaten at this supper was used at other times and no illness followed. Moreover, 2 who were ill had eaten no ice cream.

*Soft drinks.*—Sodas, lemonade, etc., were dispensed from the grill, but these drinks were not generally indulged in. Seven of those taken ill drank no soft drinks; in the remaining 7 there is doubt.

*Water.*—The water served at all the tables was from a single source and was drunk by practically all persons present. There is no evidence pointing toward the water as the vehicle of the poison.

*Alcoholic drinks.*—No alcoholic drinks were sold at the club, and none was served. There were a few who had drinks from private stocks. Four who were ill, and one at the Sebring table, not ill, partook of alcoholic beverages from private stocks. The remaining 8 who were ill drank none.

*Green olives, celery, and pickles.*—Green olives, celery, and pickles were served to all diners other than those at the Sebring table. None who partook of these relishes became ill, and of the ill none had eaten of them.

*Chocolate candy.*—Chocolate candy was furnished especially to the Sebring table by the hostess. Three of the ill ate none of it; 5 ate it; there is doubt in the cases of the remaining 6. Seven who were not ill ate of this candy. Evidently the candy may be eliminated.

*Newport creams.*—Newport creams were also especially furnished to the Sebring table. Of the ill, 1 had not tasted this candy, 9 had

eaten it, while there is doubt in case of the remaining 4. Eleven people ate freely of it and were not ill.

*Candied almonds.*—Candied almonds were served only to the Sebring table. Among the 14 affected people, 8 had eaten of the nuts, 4 are doubtful, while 2 who were ill ate none. Among the unaffected, 9 had eaten of the nuts.

*Ripe olives.*—Ripe olives were also furnished especially for the guests of the Sebring table. During the course of the dinner various diners who tasted the olives observed something peculiar in their taste, odor, or consistency, all of which qualities received more or less comment during and following the dinner. Various members of the party in describing the olives used such expressions as "smelled like limburger," "bit the tongue," "seemed to pucker the mouth," "stuck to the tongue," "not fit to eat," "soft," etc. When certain of the diners developed symptoms, the suspicion by various members of the party that the olives might be the cause prompted them to refresh their memories as to whether or not they had eaten of them.

Of the 14 persons who were ill, all ate olives. Three others who tasted of them used the expressions "just bit into one," "took a small bite," "swallowed not over a third or a half." None of these 3 showed any symptoms which could be definitely identified as similar to those of the above-mentioned 14 definite cases. One, however, states that she felt badly on the day following the banquet, and had symptoms of an indefinite gastrointestinal attack to which she is subject. It is impossible to state whether poison from the dinner may or may not have been a causative factor in these indefinite symptoms.

When the dead are considered it is found in a general way that those died first who ate the most olives. Among those who were ill but recovered those who suffered the severest attacks ate more olives than those who were less severely attacked.

Those who ate olives and were not definitely affected ate the least of all. (See Tables II and III.) The average number of olives eaten by those who died is between 2.5 and 3.5; by those definitely ill but who recovered, 1; by those unaffected, perhaps one-third.

TABLE II.—*Fatal cases—Relation of time elapsed between dinner and death to the number of olives eaten.*

| Patient. | Hours elapsed between dinner and death. | Number of olives eaten. |
|---|---|---|
| R. J. | 54.0 | 5 or 6 |
| Mrs. I. W. G. | 55.5 | 3 |
| C. C. W. | 59.5 | 4 or 5 |
| J. C. S. | 69.0 | 4 or 5 |
| F. McA. | 75.0 | 2 |
| Mrs. J. C. S. | 86.5 | 1 |
| Mrs. W. F. S. | 174.5 | 0.5 |
| Total | | 20 to 23 |

TABLE III.—*Nonfatal cases—Relation of severity of illness to the number of olives eaten.*

| Patient. | Order of severity. | Number of olives eaten. |
|---|---|---|
| C. O. | 1 | 2 |
| Mrs. L. H. B. | 2 | 1 |
| Mrs. C. B. | 3 | 0.5 |
| L. H. B. | 4 | 0.5 |
| I. W. G. | 5 | 1 |
| Mrs. C. C. W. | 6 | 1 bite. |
| C. B. | 7 | 1 bite. |
| Mrs. W. H. M. | Doubtful symptoms | 1 bite. |
| Mrs. W. E. D. | No symptoms | 1 bite. |
| W. E. D. | No symptoms | 1 bite. |
| Total number of olives eaten of. | | 11 |

Suspicion is further cast upon the olives by the fact that, although they were in a vacuum-sealed glass jar, something had occurred to destroy the vacuum in the jar; for, in opening it, the lid is said to have come off easily without having been punctured and without the use of instruments. The lid was lost before it was known that any interest might be attached to it. The recovered glass jar was not cracked or defective in any way.

The waiter who received the jar from I. W. G. opened it immediately and placed the olives in three table dishes. The olives placed in two of these he washed under the tap and drained through his fingers, while the olives in the third dish were unwashed. This may possibly aid in explaining the fact that one person, for instance, died from eating one-half an olive, while another recovered after eating two olives. Certainly the washing would remove some poison. Furthermore, it may be that a firm olive with unbroken skin would contain less toxic material than a riper one or one with a broken skin, and, moreover, we know nothing about individual susceptibility or the influence of other articles of food or drink on the effect of the poison. In this connection it is interesting to note that the waiter who ate two olives and recovered drank considerable whisky and other alcoholic drinks both before and after eating the olives, and one guest who ate one olive, and had a few symptoms afterwards, also drank whisky following the dinner.

A bottle of olives of the same size and brand as those used at the dinner of August 23 was found to contain 43 olives. The number said to have been eaten plus the 6 olives recovered amounts to from 37 to 40. It is probable, therefore, that some ate more than our information would indicate. This does not seem remarkable, since the numbers are apt to be less definitely remembered after 3 or 4 are eaten.

The occurrence of poisoning at the Sebring table can be accounted for only by the ripe olives served at this table.

Among the waiters at the club there is a custom of collecting the delicacies after the diners have finished, and the two waiters poisoned

did so collect the left-over olives and ate some of them. Later, waiter C. O. carried the olives to the chef with the request that he "Try one of these damn things, they don't taste right to me." The chef ate two and later died.

**Epidemiological Summary.**

1. The ripe olives were known to have had a peculiar taste and odor, and in the light of the epidemiological data and circumstances under which the poisoning occurred, it does not seem possible to hold any other article of the menu to be the vehicle of the poison.

2. The limitation of the poison to the diners at the Sebring table, to the waiters of this table, and to the chef, is explained by the theory that the ripe olives were the poisoning agent.

3. Fourteen of the 17 who ate or tasted of the ripe olives were definitely ill.

4. None were ill who did not eat ripe olives.

5. The severity of the illness in each case was, in general, proportionate to the number of ripe olives eaten.

6. The factors that some of the olives were washed before they were eaten while some were not, of our ignorance of the relative toxicity of different olives, of the effects of other articles of food or drink on the poisonous substance, and of individual immunity or susceptibility, together with numerous other factors of unknown effect, would seem to furnish various possibilities for explaining why some recovered after eating more ripe olives than others did who died.

**Epidemiological Conclusion.**

The poison which caused the death of the 7 people and the illness of 7 others under the circumstances described, was contained in a jar of ripe olives supplied by the hostess to her guests. The ultimate source and character of the poison remain for consideration.

THE TOXIC SUBSTANCE.

The poison in the olives must have been:

(1) Something inherent in the olives themselves;
(2) Something added during the canning process;
(3) Something added after the can was opened; or
(4) Something formed in the jar by the action of micro-organisms.

The first assumption need scarcely be considered in so staple a food as olives.

Concerning the second possibility, we know but little, since we are as yet ignorant of the exact procedure of canning. The olives, in question were packed by a firm bearing an excellent reputation and there seems to be no ground to doubt that reasonable care was observed in their preparation.

The jar in question was purchased on the evening of the banquet, and was taken directly to the club. It was delivered to a trusted waiter by a member of the party who gave instructions for serving. The waiter opened the jar at once, placed the olives in three dishes, washing those in two of the dishes, and placed the dishes on the table. There seems to have been little opportunity for anyone with malicious intent to poison the jar after its purchase, as has been suggested by some, and no reason to suspect that such a thing had been done. The possibility that the poison was a bacterial toxin will be considered in the discussion of the bacterial examination of the olives and brine.

*Toxicity of the olives and brine.*—Six olives and a small amount of brine from the original jar were recovered, a waiter having placed them in the ice box, where they remained until secured by a local investigator.

The 6 olives and brine were delivered to Dr. John G. Spenzer of Cleveland, a chemist, for examination. From Dr. Spenzer the State department of health secured 2 olives and about 5 cc. of brine.

The 2 olives when secured on September 3 were light brown in color, soft, considerably macerated, and had a putrid odor suggestive of feces. Chemical examination by Dr. Spenzer gave the following results:

Volatile poison, 0.
Irritant poison, 0.
Corrosive poison, 0.
Alkaloidal poison, 0.
Glucosidal poison, 0.
Putrefactive poison, 0.

A portion of turkey also submitted to Dr. Spenzer for examination gave entirely negative chemical and bacteriological findings.

*Animal experiments.*—(*a*) Inoculation Experiments: The authors used guinea pigs weighing from 250 to 300 grams throughout their animal experiments. An emulsion of one-half an olive in 10 cc. of sterile saline, given subcutaneously, proved lethal to guinea pigs in 1 cc. dose, while 0.5 cc. gave symptoms but recovery (Table IV).

TABLE IV.—*Toxicity of recovered olives.*

| Guinea pig. | Received. | Amount, c. c. | Route. | Result. | Time later. |
|---|---|---|---|---|---|
| No. 1..... | ½ olive in 1.0 c. c. saline..... | 1 | Subcutaneous... | Death..... | 24 hours. |
| No. 2..... | .....do..... | 0.5 | .....do..... | Ill but recovered.. | |
| No. 3..... | ½ olive in 10 c. c. saline (control) | 1 | .....do..... | Not ill..... | 50 days. |

Varying amounts of brine were next injected subcutaneously into guinea pigs in doses varying from 1 c. c. to 0.001 c. c. These pigs all died in from less than 18 hours to 4 days. (Table V.)

TABLE V.—*Toxicity of recovered brine.*

| Guinea pig. | Received. | Amount, c. c. | Route. | Result. | Time later. |
|---|---|---|---|---|---|
| No. 4 | Olive brine | 1 | Subcutaneous | Death | 18 hours. |
| No. 5 | do | 0.5 | do | do | Do. |
| No. 6 | do | 0.1 | do | do | 31 hours. |
| No. 7 | do | 0.01 | do | do | 32 hours. |
| No. 8 | do | 0.001 | do | do | 96 hours. |
| No. 9 | Olive brine (control) | 1 | do | Not ill | 52 days. |

A jar of ripe olives of the same brand and shipment as those used at the banquet furnished the material for controlling these experiments. The control pigs remained well.

(*b*) Feeding experiments: Two pigs, each forced to swallow 0.15 c. c. of brine left from the banquet, died on the third day following. A third pig, forced to swallow an uncertain amount of one of the two recovered olives, died also on the third day following. (Table VI.) The controls remained normal.

TABLE VI.—*Feeding experiments, recovered olives, and brine.*

| Guinea pig. | Received. | Amount (c. c.). | Route. | Result. | Time later. |
|---|---|---|---|---|---|
| No. 10 | Olive brine | 0.15 | Mouth | Death | 70 hours. |
| No. 11 | do | 0.15 | do | do | Do. |
| No. 12 | Olive | 0.5 ± | do | do | 84 hours. |
| No. 13 | Olive brine (control) | 0.15 | do | Not ill | 48 days. |
| No. 14 | Olive (control) | 0.5 ± | do | do | Do. |

(*c*) Sterile Filtrate: Three c. c. of the original brine, diluted to 20 c. c. with sterile saline, was filtered through a Berkefeld filter. The filtrate, which proved to be sterile to both aerobic and anaerobic cultures, was next injected subcutaneously into guinea pigs and proved to be highly poisonous. (Table VII.)

TABLE VII.—*Sterile filtrate, original brine.*

| Guinea pig. | Received. | Amount (c. c.). | Route. | Result. | Time later. |
|---|---|---|---|---|---|
| No. 15 | Olive brine filtrate | 0.15 | Subcutaneous | Death | 25 hours. |
| No. 16 | do | 0.075 | do | do | 41 hours. |
| No. 17 | Olive brine filtrate (heated) | 0.15 | do | Not ill | 48 days. |
| No. 18 | do | 0.075 | do | do | Do. |

The recovered olives and brine had been mixed with tap water, exposed to air, dishes, fingers, etc., for several days, and were grossly contaminated with various organisms. It is apparent that the guinea pigs had not died of septicemia, however, since the sterile filtrate was also lethal. Moreover, autopsy was performed on each pig that died, and no evidence of septicemia was found in any case.

(*d*) Toxin Destroyed by Heat: The above-mentioned filtrate after heating to 80° C. for 30 minutes proved harmless. Similar doses in the "raw" occasioned death in 25 and 41 hours.

The pathological findings and clinical features will be referred to later.

*Examination for anaerobic sporebearers.*—Samples of the original olives and brine, heated to 60° C. for 60 minutes, following Dickson and Burke,[1] were inoculated, in varying dilutions, into deep tubes of molten beef infusion 1 per cent dextrose agar made 0.2 per cent alkaline to phenolphthalein. Following inoculation, the tubes were covered with liquid paraffin, cooled rapidly, and incubated at 37° C. and at room temperature. Within 48 hours colony formation was observed in the 37° C. tubes, followed by abundant gas formation and active fragmentation of the agar. At room temperature, growth could not be detected until the fifth day.

Suitable tubes were selected, broken across, and various colonies picked and transfers made to fresh tubes of beef infusion dextrose agar and into beef infusion dextrose broth for further study.

The broth transplants cultured anaerobically at 37° C. showed abundant growth at the end of 4 days. These tubes were tested for toxin by injecting 1 c. c. subcutaneously into guinea pigs. Several tubes showing a toxin lethal in this amount were selected for study.

*Characteristics of the organism.*—Morphologically the organism is a coarse bacillus varying from 2 to 6 microns in length, usually with rounded ends. It occurs singly, but occasionally in pairs. Motility, while present, is not vigorous. Under suitable conditions numerous terminal oval to round spores are found, which, being of greater diameter than the vegetative form, cause a terminal swelling. Young cultures are definitely, yet not strongly, Gram-positive. The organism stains well with the ordinary dyes, but takes the stain irregularly, barred forms often being found. The spores stain more faintly than the balance of the cell; however, spore-bearing organisms are often encountered where the whole cell stains faintly.

Culturally, the organism is a strict anaerobe. In our work, the organism was grown under oil or in the Novy jar in an atmosphere of hydrogen. Later, it was found by one of the writers (Story) that natural gas, such as is used in the laboratory, would answer for displacing the air, and permitted good growth. In the latter part of the work, gas was used for this purpose in place of hydrogen.

Growth is best at 37° C., but occurs at room temperature and at 20° C. after several days. Cultures have a characteristic odor suggestive of strong butter or cheese.

On meat infusion agar or meat infusion dextrose agar made slightly alkaline, colonies can be observed in from 3 to 5 days at 37° C.

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[1] Jour. A. M. A., August, 1918, 518.

On dextrose agar, gas is formed and the agar is actively fragmented.

Gelatin is liquified at 20° C. in from 4 to 7 days with a diffuse growth.

Litmus milk is coagulated with decoloration of the litmus in from 2 to 3 days at 37° C. Later, partial peptonization occurs.

In beef infusion dextrose broth, vigorous growth with gas formation is seen at the end of 24 hours at 37° C., and later at room temperature.

Dextrose, saccharose, lactose, and mannite are fermented with gas and acid formation.

The different strains of *Bacillus botulinus*, as described by various authors, are found to vary with reference to their cultural reactions, which, it may be said, are imperfectly understood. This particular organism differs from several described strains in its action on milk and sugars.

From its morphology, toxin formation, and growth characteristics, together with the symptoms and pathological lesions produced, this organism is considered to be a strain of *Bacillus botulinus*. This opinion has been confirmed by Sisco, of the Harvard laboratories.[1]

*Growth on olive media.*—Ripe, unspoiled olives and brine of the same brand as that of the original jar were used for this purpose. The olives were chopped, tubed, covered with brine, and nothing else was added. The tubes were autoclaved at 15 pounds for 30 minutes, cooled rapidly, inoculated, coated with oil, and incubated at 37° C. and at room temperature.

After 3 days at 37° C. the brine was clouded and there was moderate gas formation, bubbles accumulating in the ground olives at the bottom of the tube. The organism produced abundant spores on this medium and gave the peculiar rancid odor of *Bacillus botulinus*. Tubes grown at room temperature and at 37° C. were found after 9 days to contain a powerful toxin. On chemical examination the olive liquor was found to be a weak brine, having 2.87 grams of solids per 100 cc., of which 1.67 grams were sodium chloride, evidently too little to inhibit *Bacillus botulinus*, as the organism was found to grow well on meat infusion dextrose broth containing salt to 3 per cent, and still grew, though less vigorously, in a medium with 6 per cent sodium chloride.

*Effect of light.*—The effect of light on this organism has not been fully studied; but it does not seem to be important in connection with this case, since in a jar of closely packed olives covered by a dark-colored brine there would seem to be but little opportunity for light to operate. The most important condition affecting the growth of

[1] Personal communication.

the organism seems to be the presence or absence of oxygen. A vacuum sealed jar may be expected to furnish the required anaerobic conditions. The formation of gas from within, or a defective seal, might account for the fact that the vacuum had been destroyed in this particular jar, for it will be recalled that the lid came off easily. Had the seal been defective, however, and allowed air to enter, it is still probable that *Bacillus botulinus* could have grown; for the presence of air would have encouraged the growth of the usual putrefactive organisms which are known to utilize the free oxygen from media and thus produce conditions favorable for the growth and toxin formation of *Bacillus botulinus*.[1]

*Spore formation.*—Spores were found at times in nearly all media on which the organism was observed to grow, but were especially numerous and constant in the olive medium.

*Resistance to heat.*—Tubes of meat infusion dextrose broth or agar, seeded with *Bacillus botulinus* from an olive culture possessing numerous spores, showed the latter to be quite resistant to heat. Tubes heated to 100° C. for 30 minutes in the Arnold sterilizer, when incubated at 37° C., showed growth and gas formation on the fourth day. Tubes heated for longer periods at 100° C., or autoclaved at 15 pounds for 15 minutes, have shown no growth after 14 days.

*Toxin formation.*—Tubes of meat infusion dextrose broth and of the above-mentioned olive medium, when seeded with the mixture of organisms from the original toxic olives, produced a strong toxin in 8 days. In pure culture a strong toxin was also formed in olive and other media.

In order that a standard toxin might be obtained, flasks of beef infusion 1 per cent dextrose broth, slightly alkaline, were inoculated with pure culture of *Bacillus botulinus*, covered with oil and incubated at various temperatures. Tubes grew best at 37° C. and with more rapid toxin formation, a 9-day-old culture developing a toxin approximately 200 times as strong as an 11-day-old culture grown at room temperature. The sterile filtrate from this 9-day-old 37° C. culture proved lethal to guinea pigs in 0.00,005 cc. doses when administered intraperitoneally. This toxin kept in the icebox was used throughout the following experiments.

*The effect of alcohol on the toxin.*—That alcohol might possess the property of destroying *Bacillus botulinus* toxin was suggested by the epidemiological data. Two cases, it will be remembered, who recovered after eating one and two olives, respectively, had partaken more or less freely of alcoholic drinks during the evening.

In testing for the effect of alcohol on the toxin, various doses of toxin diluted to 1 cc. with sterile saline, were mixed with 0.5 cc. of

[1] Von Ermengem, Shippen, and others.

95 per cent alcohol, thus giving in the test tube a mixture of approximately 32 per cent alcohol. The mixtures were allowed to remain for several minutes in the tube, with frequent shaking to prevent any precipitate which might form from settling. The mixtures were then injected either subcutaneously or intraperitoneally into guinea pigs. It was found possible in this manner to protect guinea pigs against 20 times the lethal dose of raw toxin. (See Table VIII.) The effect of alcohol on toxin given by mouth and its possibilities as a therapeutic agent are being studied and will be reported on later.

TABLE VIII.—*Results of administration of alcohol-toxin mixtures.*

| Guinea pig. | Received— | | | | Route. | Result. | Time later. |
|---|---|---|---|---|---|---|---|
| | Toxin. | | Alcohol. | | | | |
| | Amount. | Number of fatal doses equivalent to— | Amount. | Per cent in mixture. | | | |
| | cc. | | cc. | | | | |
| No. 26 | 0.01 | 200 | 0.5 | 3.33 | Intraperitoneal | Death | 18 hours. |
| No. 27 | .01 | 200 | .5 | 8.33 | do | do | Do. |
| No. 28 | .01 | 200 | .5 | 8.33 | Subcutaneous | do | Do. |
| No. 29 | .01 | 200 | .5 | 32.0 | do | do | 20 hours. |
| No. 30 | .002 | 40 | .5 | 32.0 | do | do | 49 hours. |
| No. 31 | .001 | 20 | .5 | 32.0 | do | Recovered | 20 days. |
| No. 32 | .001 | 20 | .5 | 32.0 | Intraperitoneal | Death | [1] 4 days. |
| No. 33 | .001 | 20 | .5 | 32.0 | Subcutaneous | Recovered | 18 days. |
| No. 34 | .0005 | 10 | .5 | 32.0 | do | do | Do. |
| No. 35 | .0002 | 4 | .5 | 32.0 | do | do | Do. |
| No. 36 | .0002 | 4 | .0(control) | | do | Death | 4 days. |

[1] Pneumonia.

## SEROLOGICAL EVIDENCE.

Forty-five days after the fatal meal, serum was collected from three recovering patients. Agglutination tests by both microscopic and macroscopic methods showed the serum from the recovering patients to be agglutinative for the isolated organism in dilutions of 1:100; this, however, was no higher than was secured in controls with normal serum. (Table IX).

TABLE IX.—*Agglutination.*

| Serum of patients— | Dilutions. | | | | | |
|---|---|---|---|---|---|---|
| | 1:20 | 1:40 | 1:80 | 1:100 | 1:150 | 1:200 |
| C. B. ♀ | + | + | + | ± | − | − |
| C. O. ♂ | + | + | + | + | − | − |
| Control | + | + | + | + | − | − |
| Do | + | + | + | ± | − | − |

*Antitoxin.*—Varying amounts of toxin were mixed with 1 cc. of serum from the recovering patients, and the mixture left to stand in the test tube for several minutes before injection. The mixtures were given subcutaneously and proved as lethal as the corresponding amounts of toxin mixed with normal serum (Table X).

TABLE X.—*Effect of toxin-serum mixtures.*

| Serum from patient— | Guinea pig. | Received— | | | Route. | Result. | Time later. |
|---|---|---|---|---|---|---|---|
| | | Toxin. | | Serum. | | | |
| | | Amount. | Lethal dose. | | | | |
| | | c.c. | | c.c. | | | |
| C. B. ♀ | No. 40 | .0001 | 2 | 1 | Subcutaneous. | Death | (?). |
| C. B. ♀ | No. 41 | .0005 | 10 | 1 | do | do | Second day. |
| C. B. ♀ | No. 46 | 0 | 0 | 1.5 | do | No effect | 16 days. |
| C. O. ♂ | No. 42 | .0001 | 2 | 1 | do | Death | Second day. |
| C. O. ♂ | No. 43 | .0005 | 10 | 1 | do | do | 24 hours. |
| C. O. ♂ | No. 47 | 0 | 0 | 1 | do | No effect | 16 days. |
| I. W. G. ♂ | No. 44 | .0001 | 2 | 1 | do | Death | Second day. |
| I. W. G. ♂ | No. 45 | .0005 | 10 | 1 | do | do | 25.5 hours. |
| X (control) | No. 48 | .0001 | 2 | 1 | do | do | Second day. |
| Y (control) | No. 49 | .0001 | 2 | 1 | do | do | Third day. |

While agglutination and antitoxin formation against various strains of *Bacillus botulinus* have been demonstrated in experimental animals—goats, horses, and mules—by various workers, their production has been attended with considerable difficulty. We have been unable to find a case of botulism in man where serological tests were successful in identifying the organism. The patients from whom blood was received were I. W. G., a mild case, whose only symptoms were weakness, some change in his voice, and a slight difficulty of speech. He was well at the time blood was secured. The other two patients, Mrs. C. B. and C. O., were quite severe cases, and while the eye, throat, and paralytic symptoms had practically disappeared, there was still a profound weakness in each case. An attempt to demonstrate the presence of free toxin in the circulating blood of these patients was made by injecting 1.5 cc. of serum into the peritoneal cavity of guinea pigs. No ill effects developed from this dose. Larger amounts were not used as the serum was not available. Complement fixation tests were not made.

*Growth and toxin formation in animals.*—Working with his original cultures, von Ermengem failed to produce toxin at 30° C. and above, and concluded from this fact that *Bacillus botulinus* was unable to develop its toxin in a warm-blooded animal. Several strains, including the one under investigation, have been found by various workers to have their optimum growth and toxin formation at 37° C.

Following some suggestive work by Thom and others,[1] a guinea pig was given, subcutaneously, some 300,000,000 *Bacilli botulini* from a flask containing powerful toxin and numerous spores. The organisms before injection were freed of toxin by heating to 80° C. for 30 minutes. The animals were still well 26 days after the injection.

Heated cultures, force fed and given on grass and feed, likewise failed to cause any symptoms in guinea pigs; cultures, however, showed the presence of viable organisms following the heating. (Table XI.)

TABLE XI.—*Effect of spores on guinea pigs, injected subcutaneously and fed.*

| Guinea pig. | Millions of organisms received. | | | | Route. | Result. | Time later. |
|---|---|---|---|---|---|---|---|
| | Heated to 80° 30 minutes. | Washed 12 times. | Washed 14 times. | Washed on filter. | | | |
| No. 50 | 300 | | | | Force fed | Not ill | 26 days. |
| No. 51 | 300 | | | | Subcutaneous | do | Do. |
| No. 54 | | 300 | | | do | Died | 18 hours. |
| No. 55 | | (?) | | | Fed on grass | Not ill | 25 days. |
| No. 57 | | | 300 | | Subcutaneous | Died | 23 days. |
| No. 58 | | | (?) | | Fed on grass | Not ill | Do. |
| No. 61 | | | | 1200 | Force fed | Died | Third day. |
| No. 62 | | | | 120 | Subcutaneous | do | Fourthday |
| No. 63 | | | | 12 | do | Not ill | 20 days. |
| No. 64 | | | | 1.2 | do | do | Do. |
| No. 65 | | | | (?) | Fed on grass | do | Do. |

Organisms from a culture possessing powerful toxin were next washed in distilled water by agitating, centrifugalizing, decanting, and repeating for 12 separate washings in order to free of toxin. A pig injected subcutaneously with approximately 300,000,000 washed organisms was found dead in its cage some 18 hours later. A second culture similarly washed for 14 times but with greater agitation each time, likewise proved lethal when administered subcutaneously. When fed to animals on grass, however, there was no ill effect.

A culture was next washed on a Berkefeld filter by passing 800 cc. of sterile saline through the filter. The organisms were recovered by reversing the current. One pig which received 120,000,000 organisms injected beneath the skin died in 4 days, while two others which received 12,000,000 and 1,200,000, respectively, remained well.

A guinea pig force fed with 1,200,000,000 washed organisms died in 70 hours, while another given the organisms on grass and meal failed to show any symptoms.

It is seen that the organisms are difficult to free from toxin by washing. However, they can be freed to the extent that large numbers may be injected subcutaneously or fed to guinea pigs with no symptoms following.

[1] Jour. A. M. A., Sept. 20 1919.

The epidemiological data, moreover, would seem to indicate that the organism had not grown and produced toxin in the human cases. For had the bacilli swallowed with the olives been capable of growing and producing toxin in the alimentary tract, it seems that some of the people who ate small amounts and were but little affected would have developed serious symptoms. There is, however, on the other hand, a remarkable correspondence between the amounts eaten and the severity of the illness. A possible explanation of this fact might be sought in assuming that antitoxin was produced by the individual more rapidly than the organisms formed toxin. It will be remembered, however, that no antitoxin could be demonstrated in the blood of recovering patients. An effort was made to determine the number of *Bacilli botulini* found in one of the recovered olives. A carefully weighed portion was emulsified in saline heated to 60° C. for 60 minutes, and varying amounts were "plated" into deep tubes of meat infusion agar, incubated, and colonies determined. It was thus calculated that this olive contained as a minimum 1,300,000 bacilli, presumably spore bearers, while in the raw there were possibly several times this number of nonspore-bearing *Bacilli botulini*. It would seem that a bite of olive containing this number of viable organisms, if capable of multiplying and forming toxin in the alimentary tract, should have caused serious infection. The number of cases, however, are too few to permit conclusions, and it is not possible to say that the organisms might not produce toxin in a tonsillar crypt, a decayed tooth, the intestinal tract, or other locations where anaerobic conditions might at times prevail.

TABLE XII.—*Signs and symptoms.*

| Patient. | Date of first symptoms. | Hours from dinner to death. | Signs and symptoms. | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | Remarks. |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Headache. | Thirst. | Double vision. | Dim vision. | Weakness. | Difficult speech. | Aphonia. | Pain. | Colic. | Dizziness. | Vomiting. | Diarrhea. | Constipation. | Anorexia. | Congestion in throat. | Pulse rate. | Blood pressure. | Respiration. | Ptosis right eye. | Ptosis left eye. | Inability to focus. | Dysphagia. | Paresthesia. | Hyperesthesia. | Dilitation of pupils. | Pupilary reflex. | Knee jerks. | Babinsky. | Sensorium. | Anuria. | Retention or incontinence. | Highest temperature. | Manner of death. | |
| R. J. ♂ ... | 8-24 | 54 | 0 | 0 | + | 0 | + | + | 0 | (1) | 0 | 0 | + | 0 | (2) | + | 0 | 95 | ? | 22 | 0 | 0 | ? | + | ? | ? | + | N. | N. | 0 | N. | ? | ? | 98.6 | Resp. | Vomited 26 hours after meal. |
| I. W. G. ♀ | 8-24 | 55.5 | 0 | 0 | + | + | + | + | + | 0 | 0 | + | 0 | 0 | 0 | 0 | sl. | 84<br>96 | ? | ? | + | + | + | + | 0 | 0 | 0 | N. | N. | 0 | N. | 0 | 0 | 98 | Resp. | |
| C. C. W. ♂ | 8-23 | 59.5 | 0 | 0 | + | + | + | + | + | 0 | 0 | + | + | 0 | 0 | + | sl. | 78<br>96 | 120<br>80 | 20 | 0 | 0 | + | + | + | 0 | 0 | s'ow. | N. | 0 | N. | 0 | 0 | 98 | Resp. | Vomited 4 hours after meal. |
| J. C. S. ♂.. | 8-24 | 69 | 0 | + | + | + | + | + | 0 | sl. | 0 | + | + | 0 | + | 0 | sl. | 60<br>120 | 120<br>? | 18 | + | + | + | + | 0 | 0 | + | slow. | N. | 0 | N. | + | 0 | 98.6 | Resp. | Slight abdominal pain. Much thick mucus in throat. |
| F. Mc. A ♂ | 8-25 | 75 | 0 | + | + | + | + | + | + | (1) | sl. | + | + | 0 | + | + | sl. | 70<br>80 | ? | 18<br>20 | + | + | + | + | 0 | 0 | + | N. | N. | 0 | N. | 0 | 0 | N. | Resp. | |
| J. C. S. ♀.. | 8-25 | 86.5 | sl. | + | + | + | + | + | 0 | sl. | 0 | + | + | 0 | (2) | 0 | 0 | 50<br>140 | 126<br>? | ? | + | + | + | + | 0 | 0 | + | abs. | N. | 0 | N. | 0 | 0 | 99 | Resp. | Vomited after a dose of castor oil. |
| W. F. S. ♀. | 8-25 | 174 | 0 | 0 | + | sl. | + | + | + | 0 | 0 | sl. | 0 | 0 | 0 | 0 | sl. | 90<br>158 | 115<br>? | 18<br>30 | 0 | sl. | + | + | 0 | 0 | + | slow. | N. | 0 | N, | 0 | 0 | 99 | fcardiac<br>(+ resp. | |
| C. O. ♂ ... | 8-26 | ..... | 0 | + | + | + | + | + | + | (1) | 0 | + | + | 0 | + | 0 | s'. | 60<br>80 | 120<br>? | 18<br>24 | + | + | + | + | 0 | 0 | + | + | N. | 0 | N. | 0 | 0 | 98.4 | . ..... . | Vomited, 60 hours after meal. |
| L.H.B. ♀. | 8-24 | ..... | + | 0 | 0 | + | 0 | + | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 92 | ? | N. | + | + | + | 0 | 0 | 0 | + | N. | N. | 0 | N. | 0 | 0 | 99 | ..... | Infection of conjunctivæ. |
| C. B. ♀ ... | 8-24 | ..... | + | + | + | + | + | + | 0 | 0 | 0 | + | 0 | 0 | + | + | sl. | 112 | ? | N. | + | + | + | + | 0 | 0 | + | slow. | N. | 0 | N. | 0 | 0 | 98.6 | ..... | Vomited third day. |
| L.H.B. ♂. | 8-24 | ..... | + | 0 | + | + | 0 | 0 | 0 | 0 | 0 | + | 0 | 0 | 0 | 0 | 0 | 82 | ? | N. | 0 | 0 | + | + | 0 | sl. | 0 | N. | N. | 0 | N. | 0 | 0 | 98.6 | ..... | |
| I. W. G... | 8-27 | . .... | 0 | 0 | 0 | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | s'. | + | 0 | N. | ? | N. | 0 | 0 | 0 | 0 | 0 | 0 | 0 | N. | N. | 0 | N. | 0 | 0 | 98.6 | ..... | |
| C.C.W. ♀. | ? | ..... | + | 0 | + | 0 | + | + | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 90<br>100 | ? | N. | 0 | 0 | 0 | 0 | + | + | 0 | N. | N. | 0 | N. | 0 | 0 | N. | ..... .. | Sensitive to light. |
| C. B. ♂ ... | 8-26 | ..... | 0 | + | 0 | + | + | 0 | 0 | 0 | 0 | 0 | + | 0 | + | + | 0 | N | ? | N. | . | 0 | + | 0 | 0 | + | 0 | N. | N. | 0 | N. | 0 | 0 | N. | ..... | Vomited six times during first week. |

[1] Throat. [2] Purgatives given. N.=Normal. Sl.=Slight.

SYMPTOMATOLOGY.

The symptoms in the 14 cases were very similar though varying in some respects mainly in severity. A summary of physical signs and symptoms is given in Table XII.

The case of Mrs. W. F. S., as reported by Dr. L. F. Mutschmann, is given in detail as follows:

I first saw the patient on August 25, 1919, 52 hours after the dinner. She complained at that time of slight headache, diplopia, moderate degree of dimness of vision, and a very slight vertigo.

*History.*—Patient stated that she had attended the dinner at Canton on August 23, and that she had been in good health prior to this time. She recalled distinctly that on biting into a ripe olive it tasted spoiled. She swallowed this portion of olive and laid the rest aside, as the taste was not agreeable.

*Examination.*—On examination I found her vision to be somewhat impaired, pupilary reflexes sluggish, pupils fairly dilated, and a partial inability to rotate the left eye externally; also a slight ptosis of the left eyelid. Her temperature was normal; pulse 85; respiration 18. The blood pressure was 110, systolic; 70, diastolic. Mucous membranes of the nose and throat were only moderately congested, as were the conjunctivæ. There was at this time no audible change in speech as far as I was able to detect, nor in deglutition. The lungs were negative, the heart gave a slightly accentuated second sound. The abdomen was normal in contour, there being no distention or rigidity. The bowels and kidneys were acting normally. Patellar reflexes were normal; Babinsky absent.

August 26, 1919: The following morning, August 26, there was some embarassment of deglutition, and, to a less extent, in articulation. The pulse was about the same as on the previous day. Temperature, 98; pulse, 90; respiration, 20. The patient was able to take nourishment and felt fairly comfortable, with the exception of a slight vertigo and headache when she kept her eyes open for any length of time. This difficulty in deglutition and speech was more marked on the night of August 26.

August 27, 1919: On the morning of August 27, patient was able to rinse out the mouth, but unable to swallow; had fairly good control of the tongue during speech. There was no acute dryness of the mouth, but she complained of a slight pain and rather distressing, burning sensation in the abdomen. During the afternoon she complained of some colicky pains in the region of the lower abdomen, which disappeared after expelling a goodly quantity of brown fluid stool. Her temperature at 4 o'clock that afternoon was 97; pulse, 85; respiration, 24. By 9 o'clock that evening the patient was unable to gargle, and begain to complain of pain and a feeling of constriction in the throat, which gradually increased and distressed her greatly.

August 28, 1919: The morning of August 28 found the patient in practically the same condition, but rather drowsy and complaining of dryness and a sensation of mucous clinging in her throat, which she was unable to swallow or deliver through the mouth. She was at this time unable to protrude the tongue beyond the lips. At 7

p. m. she was relieved quite suddenly of the dryness in the throat and mouth and was able to move the tongue more freely, and wanted to try to take fluids but was unable to swallow them. At 10 p. m. she complained of a pain in the region of her heart, which traveled through the left axilla into the back and lasted about five minutes. During this time she experienced slight difficulty in breathing and became very restless.

August 29, 1919: At 6 o'clock on the morning of August 29 her chief complaint was that her throat felt very dry and raw, and that she felt extremely weak and had a sensation of her throat closing up. Change of position to her right side seemed to give her some slight relief. At noon of the same day her face became flushed, and after an hour of sleep she awoke with an increase in the choking sensation which was accompanied by slight cyanosis of the face. She was very restless. These choking sensations occurred after each short interval of sleep during the remainder of the day. During the following night she was very much fatigued and slept about an hour in all. I had received some *botulinus* serum from the agricultural department of the University of Illinois, and had given her a desensitizing dose at 9 o'clock on August 29. There being no apparent reaction, she was given 5 cc. hypodermically. Again at 4 o'clock she was given 5 cc. After each injection she perspired profusely and complained of feeling hot and very weak, but within an hour seemed to recover and felt improved.

August 30, 1919: On the morning of August 30 her temperature was 98; pulse, 90; respiration, 22. Her systolic blood pressure was 100; diastolic 70. She was given another 5 cc. of the serum. At evening she was resting rather quietly but constantly trying to clear her throat. Her temperature at noon was 98; pulse, 90; respiration, 24. By 2 o'clock her pulse was 118, her body felt cold and was covered with a clammy perspiration. Toward evening her respirations increased to 28 and were shallow and slightly irregular. The pulse was 126 and she was quite cyanotic, but appeared to be resting, though very weak. The respiration gradually became more shallow and the pulse more irregular.

August 31, 1919: On the morning of August 31, her pulse was 158; respiration, 24. She was too weak to move in bed and unable to talk; the cyanosis was gradually spreading; her body was bathed in a profuse, cold perspiration. Respiration ceased at 2.15, cardiac failure occurring first.

On my first visit I prescribed large doses of magnesium oxide and hypodermics of strychnia—grains 1/40 every three hours; hypodermics of camphorated oil were added to this toward the latter part of the illness. After she was unable to take fluids by mouth she was given 500 cc. of saline by the "Murphy method" every three hours, which she retained on the whole very nicely.

She was not troubled with constipation nor diarrhea at any time during the illness. Nutritive enemas were given and occasionally black coffee and small quantities of brandy.

*Symptomatology in animals.*—In guinea pigs the symptoms appear in from 6 to 48 hours, or even longer, according to the dosage, following subcutaneous injection. The symptoms are slower in onset where the toxin is fed.

With the onset of illness the animal sits as though cold, the hair is roughened, and the flanks are sunken. Respiration is soon disturbed; it becomes slower than normal and is attended with considerable effort. This continues until there is complete diaphragmatic paralysis. There is great weakness, and the animal lies on its abdomen with extremities extended. The cornea appears dry, and often the animal is unable to wink. The neck is usually completely paralyzed. No dribbling of saliva has been observed in guinea pigs. In other cases the paralysis and weakness seem confined to the posterior part of the animal; the head is held up and the animal is able to wink normally. Temperature is usually subnormal.

Guinea pigs in the last stage of poisoning, etherized and the abdomen opened, showed the diaphragm to behave as a flaccid membrane. The stomach is usually found dilated, and peristalsis of the organ is not observed even after pinching or pricking. The small intestine is found empty, or nearly so, and in active peristalsis. The large intestine is usually found packed with solid contents and devoid of peristalsis. The heart continues to beat after respiration has ceased.

Cats seem relatively more resistant to the toxin than guinea pigs. A cat given 0.5 cc. of powerful toxin showed no symptoms until the third day, when three dead kittens were aborted. On the fourth day there was noted a dribbling of saliva and weakness of hind parts. This progressed until there was inability to stand or raise the head. The pupils reacted to light, and winking was normal. Respiration was easy but shallow. There was inability to mew. There was no fever, and constipation was marked. The cat was anesthetized on the sixth day, and findings were similar to those in the guinea pigs.

### PATHOLOGY.

Two coroner's autopsies were performed prior to this investigation, one complete and the other confined to the abdomen. The ligated stomach, a portion of the intestine, a kidney, and piece of liver from the case of R. J., together with the same organs and a piece of brain from F. McA., were submitted to Dr. John G. Spenzer, of Cleveland, for chemical examination. The various organs are said to have been quite normal in appearance. No material suitable for microscopic study is available. Dr. Spenzer found "no mechanical, volatile, irritant, corrosive, metallic, alkaloidal, glucosidal, or putrefactive poison, even in traces," in the organs examined.

*Animal pathology.*—The organs and peritoneum of guinea pigs appeared quite normal to inspection, with the exception of a generalized congestion which was present without exception in the animals examined. The veins and arteries stand out prominently, and the stomach and large intestine are usually distended.

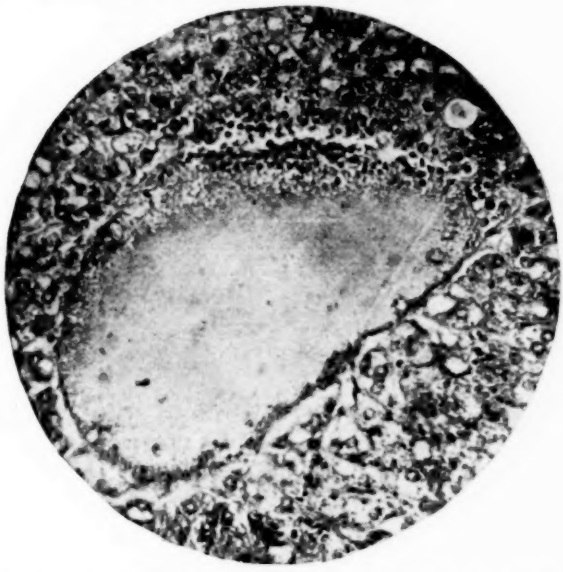

Fig. 2.—Hyaline thrombus occurring in vein of the liver, showing red blood cells and leucocytes at margin. From case No. 39, which received 0.001 cc. of a Berkfeld filtrate of a 9-day broth culture, together with 1 cc. of the serum from a patient who had recently recovered from botulism. Death of the guinea pig occurred in 24 hours.

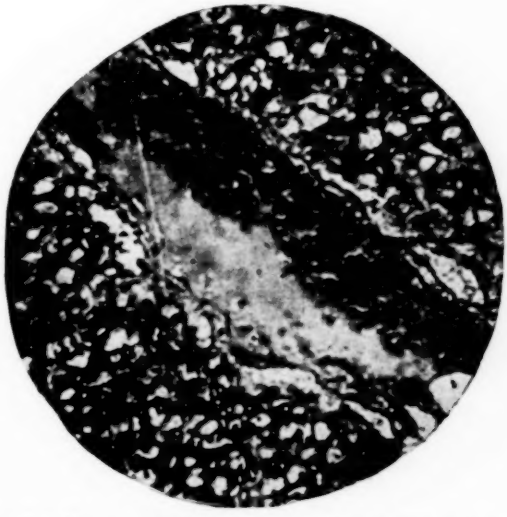

Fig. 3.—Partial hyaline thrombus occurring in a vein of the liver, showing admixture of red blood cells. From case No. 24, which received 0.0001 cc. of 9-day broth culture. Death in 24 hours.

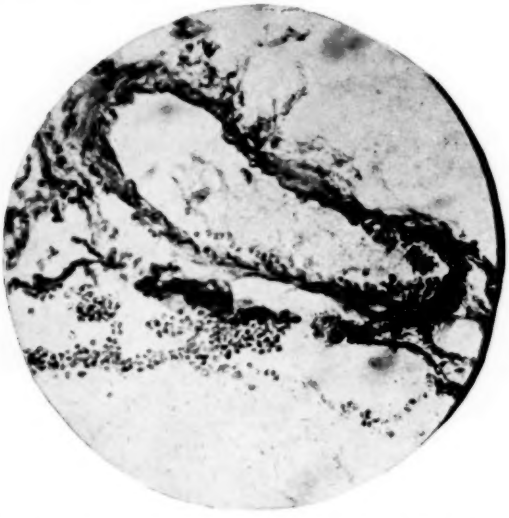

Fig. 4.—Fibrinous thrombus occurring in an artery and vein of the kidney in case No. 25, which received 0.0001 cc. of a Berkfeld filtrate of a 9-day broth culture. Death in 17.5 hours.

Fig. 5.—A higher magnification of a fibrinous thrombus occurring in an intertubular vein of the kidney of the case shown in Fig. 4.

The pleura and thoracic organs show the same generalized congestion. Pneumonia was found in two cases.

The brain appears normal except that the meningeal vessels are distended.

Macroscopic hemorrhages were present in the lungs of one animal examined in this series.

*Microscopic animal pathology.*—The inoculations and autopsy examinations were made in the laboratory of the Ohio State department of health. The tissues, after being placed in Zenker's fluid or formalin, were sent to the laboratory of pathology of the Ohio State University, where they were examined by Dr. Ernest Scott, head of the department of pathology, whose report follows:

The tissues of this series consist of the visceral organs and the brains of 18 guinea pigs and 1 cat. The most striking feature of the microscopical picture is the intense hyperemia present in all of the specimens examined. This congestion involves all of the vessels, being possibly a little more marked in the veins, but present always in the arteries and in the capillaries as well. Without exception the ventricles of the heart are filled with blood. Associated with this congested condition of the organs there is also a uniform and almost equally conspicuous degeneration of the functional cells of the liver, kidneys, adrenal glands, and heart muscle. This parenchymatous change is so marked in some instances that no normal cells can be found. In a few instances the degeneration has progressed until karyolysis and cytoplasmic disintegration are well marked. In the heart muscle swelling of the fibers with loss of striation and hydrops are frequently seen.

Dickson, in his monograph on "Botulism," [1] notes that thrombosis of the vessels is of very constant occurrence in animals suffering from botulinus poisoning. So constant, in fact, is this thrombosis that the author states that "Thrombi are so uniformly present and are so characteristic in appearance that they may be considered pathognomonic of botulism."

In discussing these thrombi, he divided them into two rather distinct types: In the first type the thrombus consists of "dense masses of fibrin arranged in thick bands and have many polymorphonuclear leucocytes enmeshed between these strands"; the second variety, or that which the author calls the "prethrombus stage," consists of "hyaline masses or loose bunches of fibrin, in which leucocytes and red blood corpuscles may be enmeshed."

The thrombi encountered in the series under discussion have been altogether of the second class or "prethrombus" type, the thrombi being chiefly of the solid or hyaline variety, with the occurrence of a definite fibrinous network within the vessels in only a small percentage of the cases. Of the 18 guinea pigs examined in this series

[1] Rockefeller Monograph No. 8.

(Table XIII), 14 showed the presence of such thrombi. In some, these thrombi were very definite and easily seen; in others, careful search was necessary to reveal them. Such thrombi were found most commonly in the liver, 14 of the cases showing involvement of this organ. There were 3 cases in which the vessels of the brain or meninges were involved, 3 cases in which the vessels of the kidneys were thrombosed, and 3 in which the vessels of the lung were involved. Sections made from the tissues of the cat showed that thrombi were not only more numerous, but that they more nearly resembled the thrombi of the first class described by Dickson, being larger, more definitely formed, and showing numerous leucocytes and red blood cells entangled in their substance. There are also present in this case many thrombi of the simpler, more purely hyaline type.

The fact that in Dickson's series of 30 guinea pigs, thrombus formation occurred in only 1 case in the first 24 hours, and that "prethrombi" occurred in 6 cases within this time may explain the presence of such a large percentage of the "prethrombus" type in the present series. It will be observed from Table XIII that of the guinea pigs used only 5 lived longer than 30 hours, while in the case of the cat, where more definite thrombosis is seen, the time elapsing before death was 6 days.

The rapid and uniformly fatal termination in these cases would indicate that the toxin produced by this strain of bacillus was of high virulency. This is further indicated by the fact that 0.00005 cc. of a Berkfeld filtrate killed the animal inoculated in 3 days.

The occurrence of hemorrhage was neither a constant nor a conspicuous factor in any of the series examined, occurring in only 3 of the cases; twice in the meninges at the base of the brain and once in the subpleural tissues of the lung.

The study of this brief series of animals tends to confirm Dickson's observation that the occurrence of thrombosis within the vessels is of great value in the diagnosis of this condition.

It will be noted (Table XIII) that the animals which died after being fed or injected with the original recovered olives and brine showed the characteristic lesions of botulism, similar to those produced by the organism isolated from the original toxic materials.

Table XIII shows the results of this study. In the investigation of cases of food poisoning where animal inoculations are made, the presence of thrombosis accompanied by hyperemia and parenchymatous degeneration should immediately suggest the presence of *Bacillus botulinus*. Special staining methods for the detection of the finer nuclear and granular changes of the brain cells were not applied.

TABLE XIII.—*Results of experiments on 18 guinea pigs.*

| No. | Dose. | Time before death. | Hyperemia. | Thrombosis. | Parenchymatous degeneration. | Hemorrhage. |
|---|---|---|---|---|---|---|
| 20 | 0.5 cc. 11-day broth culture (room temperature). | 2 days | + | + | + | + |
| 39 | 0.001 cc. Berkfeld filtrate (1 cc. serum from patient C. O.). | 24 hours | [1] + | + | + | 0 |
| 21 | 0.00005 cc. Berkfeld filtrate (9-day 37° C. broth). | 3 days | + | + | + | + |
| 24 | 0.0001 cc. broth culture (9-day 37° C.) | 24 hours | + | + | + | 0 |
| 25 | 0.0001 cc. Berkfeld filtrate (9-day 37° C. broth). | 17.5 hours | + | + | + | 0 |
| 37 | 0.001 cc. broth culture (9-day 37° C. culture). | 16 hours (found dead). | + | + | + | 0 |
| 38 | 0.005 cc. broth culture (9-day 37° C. culture). | do | + | + | + | 0 |
| 22 | 0.01 cc. broth culture (9-day 37° C. culture). | do | + | + | + | 0 |
| 19 | 2 cc. Berkfeld filtrate (8-day room temperature). | 3 days | + | + | + | 0 |
| 23 | 1 cc. broth culture (4-day 37° C. culture). | 24 hours | + | + | + | 0 |
| 23a | 1 cc. broth culture | do | + | + | + | 0 |
| 5 | 0.5 cc. original olive brine (fed) | 18 hours | + | 0 | + | 0 |
| 68 | 0.6 cc. olive media brine (9-day 37° C. culture). | 24 hours | + | 0 | + | 0 |
| 16 | 0.025 cc. Berkfeld filtrate (original olive brine). | 41 hours | + | 0 | + | 0 |
| 7 | 0.01 cc. brine from original olives | 32 hours | + | 0 | + | 0 |
| 6 | 0.1 cc. brine from original olives | 31 hours | + | + | + | 0 |
| 69 | 0.5 cc. olive media brine (9-day 37° C. culture). | 18 hours | + | + | + | 0 |
| 1 | Suspension of original olives | 24 hours | + | + | + | + |

[1] Not marked in brain.

## DIAGNOSIS.

That a single case of botulism may offer difficulty in diagnosis is quite apparent. In the present outbreak, as is usual, the individual cases were most puzzling until the occurrence of poisoning in others of the same group made the matter clear. Individual cases were early mistaken for mushroom poisoning, wood alcohol poisoning, ethyl alcohol poisoning, cerebral hemorrhage, cerebral lues, and hysteria. Other conditions which arise for differentiation are asthenic bulbar paralysis, toxic amblyopias, rabies, diphtheria, plant alkaloid poisoning, ptomaine, poliomyelitis, cerebrospinal meningitis, trembles, and encephalitis lethargica.

## PROGNOSIS.

The mortality in different outbreaks has varied and has been as high as 100 per cent; but it is most often in the neighborhood of 50 per cent. In cases which escape death, recovery is usually complete, but it may require weeks or even months in the more serious cases. Broncho-pneumonia is the complication most feared. Weakness was the symptom slowest in disappearing in the cases of nonfatal poisoning herein considered.

## TREATMENT.

The mortality from botulism is practically as high to-day as formerly, which indicates the unsatisfactory status of our knowledge of treatment. Dickson, quoting Muller, advises emesis of lavage even

after several days, as it is not unusual to find portions of the poisonous food retained in the stomach at the end of this time. Active purgation should be obtained and the colon irrigated. Patients should be kept in bed and as free from excitement as possible. Simple nourishing food and water should be given, but the danger of aspiration pneumonia must be remembered. Water is best given by rectum or subcutaneously when there is difficulty in swallowing.

Strychnia is recommended as valuable in improving the action of the damaged nervous system. Cardiac and other stimulants should be used as indicated. Antitoxin, if available, it is hoped might prove useful, but it probably must be given early to be effective. There are no available records of its successful use except in animals.

The limited evidence of the present outbreak would seem to indicate that alcohol, when given early, may be of value in lessening the symptoms, probably by destroying the toxin.

### PREVENTION.

1. The ideal of prevention would be a process of canning which effectually kills all spore-bearing organisms. However, the great resistance of certain strains of *Bacillus botulinus* to heat and other agencies, as shown by Burke [1] emphasizes the danger that a few spores may occasionally survive almost any process of canning.

2. Thorough cooking of all canned goods before serving or sampling would render foods infected with *Bacillus botulinus* harmless, in so far as the presence of preformed toxin is concerned.

3. The rejection of canned foods which show even minor changes of taste, odor, or consistency. Several of the above patients ate of the olives even though they tasted "off."

### SUMMARY.

1. The epidemiological investigation points to the ripe olives as the vehicle of the poison.

2. The olives and brine were found to be highly toxic for animals, both when fed and when injected.

3. The organism isolated from the olives and brine seems, from its morphology, cultural characteristics, toxin formation, and from the symptoms and pathological lesions produced, to be a strain of *Bacillus botulinus*.

4. Antitoxin and agglutinins could not be demonstrated in the blood of recovering patients 45 days after the dinner.

5. Alcohol has the property of neutralizing the toxin when mixed *in vitro*.

6. It would seem that *Bacillus botulinus* does not produce its toxin under usual conditions in a warm-blooded animal.

[1] Jour. A. M. A. Jan., 11, 1919.

SUPPLEMENTARY NOTE.—The authors later succeeded in securing some *Bacillus botulinus* antitoxin from Dr. John Buckley, Chief of the Pathological Division, Bureau of Animal Industry, U. S. Department of Agriculture. This antitoxin was prepared against the Boise strain of *Bacillus botulinus* and was found to be protective for guinea pigs injected with toxin formed by the organism isolated from the olives.

Pig No. 80, given intraperitoneally ½ cc. undiluted toxin, followed by ½ cc. antitoxin.

Pig No. 81, given intraperitoneally ½ cc. undiluted toxin, followed by 1/20 cc. antitoxin.

Pig No. 82, given intraperitoneally ½ cc. undiluted toxin, followed by 1/200 cc. antitoxin.

Pig No. 83 (control), given intraperitoneally ½ cc. undiluted toxin; no antitoxin.

Pig No. 83 (control) found dead in less than 12 hours.

Pig No. 82 showed typical symptoms on second day and was found dead on third day.

Pigs No. 81 and No. 80 have shown no ill effects and are well at end of fifth day.

One half cc. of toxin represented 200 lethal doses for guinea pigs when tested one month previous to this experiment. The toxin had been kept in the ice box during this interval.

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## PRECAUTIONARY MEASURES TO PREVENT LEAD POISONING.

The Office of Industrial Hygiene and Medicine of the United States Public Health Service has recently concluded a survey of the pottery industry, located chiefly in Trenton, N. J., and East Liverpool, Ohio. The survey was made with particular view to determining the extent of lead poisoning in this industry, and to give oral and written advice and precautionary instructions.

Approximately 2,000 men were given physical examinations during this survey. Where any pottery worker was found to be suffering from lead poisoning, even to the slightest degree, he was informed as to his condition and was given treatment and advice. Where any prominent physical defect was discovered, the worker was informed relative to the defect, and consultation with a physician was advised.

As a result of the physical examinations conducted by the medical officers of the Service, a number of cases of lead poisoning were discovered, and it was considered advisable to call the attention of all pottery workers who were exposed to the lead hazard to certain precautionary measures designed to reduce this hazard involved in pottery production.

The following is a copy of the set of instructions sent to the pottery workers exposed to the dangers of lead poisoning:

TO WORKERS IN POTTERIES:

Unless great care is taken, persons who work with lead in any form are liable to lead poisoning. Those who work in potteries where lead is a part of the glaze mixture are always exposed when at or near glaze-mixing, dipping, or glost-kiln firing.

The dust and fumes of lead cause more sickness among workers than is caused by any other metal. Over one-half of all the serious cases of metal poisoning is due to lead. Nine-tenths of all lead poisoning can be prevented by keeping dust and fumes from entering the mouth and nose of the worker.

Lead poisoning produces indigestion, colic, chronic diseases of the heart, lungs, and kidneys, causes paralysis, and may cause blindness.

Lead enters the system principally through the mouth and nose:

1. Through the mouth—
   - (a) By being swallowed with food;
   - (b) By being swallowed with saliva if gum is chewed, or tobacco used in any form, or if fingers are put in the mouth;
   - (c) By being licked from the lips and swallowed; and
   - (d) By being breathed in through the mouth.
2. Through the nose—
   - (a) By being inhaled as dust, and
   - (b) By being inhaled as fumes.

Lead poisoning can in almost every instance be prevented by observing the following rules:

A. FOODS.

1. Always eat a good breakfast before going to work. Drink plenty of milk. The presence of food in the stomach helps to prevent the lead from getting into the system.

2. Take a lunch or drink milk in the middle of the forenoon and afternoon.

3. Never eat or drink in the workroom.

4. Do not drink water from uncovered vessels in the workroom. (If you do so, you will drink diluted glaze.)

B. CLOTHING.

1. Never wear street clothes or shoes in the workroom; keep them in closed, ventilated, individual lockers in some other part of the building.

2. Never keep workroom clothes in lockers used for street clothes. Never wear workroom clothes home; you may expose your family to lead poisoning.

3. If working in dust, wear respirators.

C. CLEANLINESS.

1. Always wash the hands with a brush, and the face with hot water and soap, rinse the mouth, and clean the fingernails before eating, and before leaving workroom.

2. Use individual soap and towels.

3. Always take a shower bath before putting on street clothes.

4. Keep the body clean, (a) outside, by bathing in warm water at least twice a week; (b) inside, by drinking plenty of water. Keep the bowels moving once a day; constipation invites lead poisoning.

5. Keep the teeth clean and in order. See the dentist frequently. A man with bad teeth and gums is seldom healthy.

6. Don't wear a beard. If you wear a mustache, keep it short and do not stroke it during working hours.

7. Keep dirty fingers away from the mouth and nose.

8. Keep the hair covered while in workroom.

9. Don't stir up dust; *always insist on moist sweeping and moist dusting of floors and work benches.*

10. Don't chew tobacco or gum while at work.

D. STIMULANTS.

Never drink alcohol in any form; it greatly increases the danger of lead poisoning and its severity.

E. FRESH AIR.

Always insist on plenty of fresh air in the workroom.

F. MEDICAL AID.

1. Learn all you can about lead, its compounds, their uses, and their effects upon the human body, so that you may continue your work without danger and intelligently protect yourself and family.

2. Consult a physician at once if you notice any of the following symptoms:

(a) Loss of appetite.
(b) Indigestion.
(c) Continued constipation.
(d) Nausea.
(e) Vomiting.
(f) Pains in stomach.
(g) Disturbed sleep.
(h) Dizziness.
(i) Weakness of arms, limbs, or body.
(j) Muscular cramp.
(k) Continued neuritis.

It is to your own advantage to follow the advice here given as it will protect you from severe effects of lead poisoning.

## VENEREAL DISEASE IN AUSTRALIA.[1]

A great deal of knowledge pertaining to the prevention and treatment of venereal disease in Australia was gained during the war; and it is the object of this report to collect the information obtained under military conditions, in order that it may be put in available form to use in dealing with civil conditions. The inquiry, the results of which are contained in this report, was undertaken at the recommendation of the Royal Commission on Navy and Defense Administration, March, 1918.

In 1908, at the eighth session of the Australian Medical Congress in Melbourne, the medical profession in Australia first gave definite official expression on the subject of venereal disease legislation; and from this time on, laws relating to venereal disease have been passed by the various States.

Under the Prisoners Detention Act, which came into force in New South Wales in 1909, prisoners found to be suffering from venereal diseases could be detained for treatment beyond the period of their sentence.

In 1910 an experiment was made in Victoria, whereby for a period of 12 months (June 1, 1910, to May 31, 1911) syphilis was made a compulsorily notifiable disease—the notification being impersonal.

The State of Queensland in 1911 amended the Health Act by including provisions relating to venereal disease control. After 1913, however, the act remained largely inoperative.

In September, 1915, the Prime Minister of Australia called attention to the fact that venereal disease among the troops had become of serious public health importance and asked the States to consider passing legislation making notification of venereal diseases compulsory. Western Australia was the first State to take action, the venereal disease control legislation passed by this State becoming law on December 8, 1915.

An impetus was given to this type of legislation in January, 1916, when a special committee was appointed by the Commonwealth "to report upon the principal causes of death and invalidity in the Commonwealth." On May 24, 1916, the report on venereal diseases was issued in which the following recommendations were made:

> "(1) Considerable extension of education both generally on the propriety of moral living, and especially upon the subject of venereal diseases.
>
> "(2) Very considerable extension of available facilities for the treatment of these diseases.

[1] Abstract of a report, Venereal Disease in Australia, by J. H. L. Cumpston, M. D., D. P. H., Director of Quarantine of the Commonwealth. Service Publication No. 17, 1919.

"(3) That special provision should be made for infected seamen at every chief port.

" (4) Severe penalties for soliciting in the streets.

" (5) That special legislation should be passed with the object of securing that every person suffering from venereal disease is under such treatment until no longer infective."

After this report had been published, and when the prevalence of venereal disease among the troops was realized, the Commonwealth Government determined to give financial aid to the States in order that venereal diseases might be brought under control. This was done by offering a subsidy on the basis of "pound-for-pound" on all amounts of money expended by the States for the diagnosis and treatment of cases of venereal disease. The maximum amount was specified for each State and varied according to population. This subsidy was subject to the following conditions:

" (1) That the subsidy shall be on a pound-for-pound basis up to the maximum [specified for each State] * * *.

" (2) That notification of cases by medical practitioners be made compulsory.

" (3) That all practicable measures be taken for tracing the source of infection.

" (4) That the treatment shall be on recognized modern lines and adequate precautions taken against the spread of infection.

" (5) That arrangements be made as soon as possible for the performance of examinations, for microscopic examination for diagnosis and for blood examination, and that arrangements be made, where practicable, for such examinations to be made at the time of the examination of specimens from all extra metropolitan districts.

" (6) That clinics be established, where practicable, for the special treatment of venereal disease, and that patients be admitted on first appearance on the same basis as all other patients.

" (7) That patients admitted to such clinics be entitled to free treatment, any patient desirous of making a contribution to the hospital funds to be permitted to do so.

"(8) That inspection be made by a Commonwealth Officer, deputed by the Commonwealth Government, for the purpose of seeing that the above conditions are carried out.

" (9) That returns be furnished on prescribed lines.

" (10) That special facilities be afforded to any medical officer nominated from time to time by the Commonwealth Government.

"(11) That the hospital concerned will agree to undertake to arrange for a series of lectures or practical demonstrations each year to undergraduates and graduates on some subject or subjects connected with venereal disease, for attendance at which no fee will be charged.

"(12) That the claim for payment of the subsidy to be accompanied by a statement certified as correct by the State Auditor General setting out full details of services paid for."

Research work in connection with venereal disease was also provided for by an offer to the Universities of Sydney and Melbourne of a sum of £450, and an additional £100 for equipment, for the period of a year.

In this manner attention was focused on the subject of venereal-disease control, and legislation by the States ultimately followed.

The four statutes in force at the time of this report in Western Australia, Queensland, Victoria, and Tasmania all followed the same line of development and differ only in detail. They are, in general, comprehensive, and have been taken as models for this type of legislation. The fundamental principles on which the acts are based are—

"(1) That the treatment of venereal disease shall be carried out by qualified medical practitioners only, and that treatment by chemists, quacks, herbalists, or other unqualified persons shall be an offense.

"(2) That every person who is suffering from venereal disease shall be obliged to obtain immediate treatment, and shall also continue under treatment until he has received a certificate of cure.

"(3) That each person suffering from venereal disease shall upon his first consulting a doctor receive a warning notice in the prescribed form, setting out the dangers associated with these diseases."

The basic principle in the provisions was that venereal disease should be treated as disease and no attempt should be made to link such treatment with moral questions or with social or economic theories.

The statutes show minor differences in the four States, and such differences are carefully gone into in the report. Notification is compulsory, but is impersonal as neither name nor address is required. Merely the age, sex, and nature of the disease are stated, the exact terms varying in the different States. If an infected patient refuse to place himself under treatment, he may be detained by law. When prisoners are found to be infected with venereal disease, they are detained in jail until cured. A law in all four States forbids advertisement of venereal-disease remedies.

Certain statistics are quoted in the report, but warning is given that various factors may cause a percentage of error; e. g., the failure of physicians to report cases.

The periods covered by the returns are not sufficiently extensive in two of the States (Tasmania and Queensland) to justify any deductions. In Victoria one year's experience and in Western Australia two years' experience are available.

The figures show that in Western Australia, during the two years, 541 cases of syphilis and 1,599 cases of gonorrhea have been notified among the nonmilitary population. To these figures must be added 161 cases of syphilis and 567 cases of gonorrhea among military forces, making totals of 702 cases of syphilis and 2,166 cases of gonorrhea. Taking an average for the two years, this means 351 cases of syphilis and 1,083 cases of gonorrhea annually.

In Victoria during the first 12 months of the operation of the act, 2,097 cases of syphilis and 4,787 cases of gonorrhea were notified among the civilian population. The total number of cases reported, including military cases notified, was 2,307 cases of syphilis and 5,339 cases of gonorrhea.

On the basis of the estimated population at the end of 1916, the rates per 100,000 of population were as follows:

| | Syphilis. | Gonorrhea. |
|---|---|---|
| Victoria | 164 | 381 |
| Western Australia | 113 | 350 |

A detailed account of the facilities for treatment of infected persons in the various States is given, and the conclusion is reached that these facilities are on the whole insufficient.

In Queensland the Brisbane General Hospital has a limited amount of indoor accommodation, and an out-patient clinic with small attendance and unsatisfactory treatment. Two clinics dealing entirely with venereal disease are to be established, but they are not yet ready. Hospitals outside the metropolis appear to be still without any special provision for the treatment of venereal diseases. Bacteriological examination is carried out only in the laboratories of the Public Health Department.

In Tasmania the Hobart Hospital treats all out-patients who present themselves, but no special provision has been made for modern methods of local treatment. Male in-patients are being admitted and female in-patients will be admitted in the near future. At Launceston Hospital in-patients are not being admitted. The question of building wards is now under consideration. Gonorrhea specimens are being examined at the laboratory of the Public Health Department, but blood specimens for syphilis are being sent to Melbourne University, and the delay this occasions is likely to affect the test.

An official leaflet setting forth the hospitals and other facilities for treatment in Western Australia states that at the Perth Public Hospital special facilities are provided for the treatment of out-patients and in-patients. At Freemantle, Kalgoortie, Children's, and all other hospitals, treatment may be obtained by application to the medical officer in charge. District medical officers, who are stationed at large numbers of towns throughout the State, will give treatment where there is no hospital. Any person is entitled to treatment free of charge.

In Victoria neither the clinic at the Alfred Hospital nor that at the Melbourne Hospital is yet in full working order; and for this reason the Public Health Department opened a venereal disease clinic for men June 17, 1918. (A clinic for female patients is also contemplated.) Attendance at the men's clinic for week ended June 22, 1913, was 103. This increased until the attendance for the week ended October 16, 1918, was 1,000. The total attendance between these dates—a little less than four months—was 19,230.

Statistics are given as to cases of venereal disease occurring in the military forces mobilized by the Commonwealth. Medical examination of recruits mobilized in October, 1916, gave total percentages of venereal-disease cases as follows:

| | |
|---|---|
| Queensland | 1.5 |
| New South Wales | 2.2 |
| South Australia | .6 |

These figures relate to men called to compulsory service, and should be fairly accurate. They indicate that from 1 to 2 per cent of the adult unmarried male population are venereally infected.

The numbers of men suffering with venereal disease after enlistment and during service between August, 1914, and September, 1918, have been—

| | |
|---|---|
| In Australia | 13,038 |
| Abroad | 40,950 |
| | 53,988 |

The total of 40,950 does not include the number of venereal-disease cases in Egypt after March, 1916. It would be quite a moderate estimate to add 1,000 for these, making the total number of venereal patients 55,000.

The venereal figure of 55,000 represents persons irrespective of the fact that one person may have had more than one attack.

The total for cases admitted to venereal camps in Australia is made up as follows:

| State. | Gonorrhea. | Syphilis. | Chancroid. | Mixed. | Discharged as non-venereal. |
|---|---|---|---|---|---|
| Queensland | 1,583 | 205 | 41 | 49 | 49 |
| New South Wales | 2,937 | 591 | 26 | 90 | 152 |
| Victoria | 4,695 | 665 | 418 | 298 | 16 |
| South Australia | 767 | 81 | 17 | 17 | 51 |
| Western Australia | 343 | 161 | | | 12 |
| Tasmania[1] | | | | | |

[1] Not available.

The average duration of stay in camp as compiled from the figures at four of the principal camps was 72 days for gonorrhea and 74 days for syphilis.

Taking the number of venereal cases dealt with in Australian camps as 13,000, and the average loss of time as 10 weeks for each case, it is found that venereal disease alone was responsible for the loss of military efficiency as measured by time of rather more than 2,500 [man-]years. The actual cost of these establishments is not known, but it must have reached a very considerable amount.

In summarizing the work done, the report states that the campaign has been carried on along the following lines of activity: Coercive legislation, adequate opportunities for treatment of all infected persons along modern methods, and education of the public. Attention has been focussed on the first two as the more immediately important.

The result is that existing legislation is drastic and very comprehensive. It is, however, not enforced in toto, partly because public opinion is not back of its enforcement, and partly because of lack of hospital facilities.

The following summary, with which the report concludes, states clearly the present status of the venereal-disease problem in Australia:

"It must be evident, then, that even if it shall be found advisable in the future to enforce rigidly the drastic provisions of the statutes, such will not be possible until, in the first place, the Government can assure the public that the hospital and other facilities are adequate to the needs of this situation, and, in the second place, there has been created a sound public opinion which will insure full compliance with the statutory requirements by all persons concerned, and which will not tolerate evasions of any material obligations. * * *.

"The present position is unsatisfactory to the extent that the creation of venereal-disease clinics on modern lines at all large hospitals is being very slowly developed. Upon the successful working of an adequate scheme of facilities for treatment depends the whole success of this venereal-diseases experiment, and at present the delays in this respect threaten the future success of the whole system of venereal disease control.

"The return to Australia of 55,000 soldiers who have had venereal disease whilst on active service abroad will create a situation of con-

siderable importance to the health of the community. It can not be expected that, although these patients have received treatment for their diseases abroad and after their return, they will all remain for all time in a noninfective condition. Many of them are bound to suffer from delayed manifestations or to become again infective.

"As has been stated earlier in this report, the records show that the enlistment of large numbers of men from the country districts has resulted in their introduction to irregular sexual intercourse and their infection with venereal disease. As venereal disease has hitherto been almost confined to the metropolitan districts, the demobilization of the military forces returning from service abroad will almost certainly result in the widespread infection of the hitherto uninfected country districts, notwithstanding the instructions issued to detain such men for treatment.

"It is clearly impossible to deal with all these men under military conditions, as this would entail the maintenance of extensive military camps and the detention of large numbers of impatient men therein for prolonged periods.

"The necessity, therefore, for having the civil administration perfected at the earliest possible moment, so that these cases will be automatically dealt with, is self-evident.

"The Commonwealth Government has already recognized the importance of these diseases by subsidizing the State Governments for any expenditure on the control of these diseases, and this military problem represents an extension of the Commonwealth responsibility. It will probably be necessary for the Government to consider an increase in the financial contributions to the States in order that the State machinery may be made complete enough to deal with the new problem now to be faced, as well as with the existing situation, which is not at present sufficiently provided for.

"In view of the great interest attaching to this experiment in social legislation, and the importance of watching each stage in its development, it is considered that there should be attached to the staff of the Quarantine Service a special medical officer with experience in the treatment of venereal diseases, who shall be concerned with watching carefully the experience of the States in the administration of the Venereal-Diseases Acts and reporting from time to time on developments of the various phases of this question. This officer also could collect information concerning the experience gained in other countries, the most recent scientific advances, which could be published at regular intervals and circulated for the benefit of the medical profession. The necessity for keeping the medical profession in touch with the latest developments of the subject is recognized by all concerned as one of the most important phases of administration of any venereal-disease administration.

"In doing this the Commonwealth would only be following the example of the United States of America, where the Federal Government has created a special Division of Venereal Diseases in the United States Quarantine and Public Health Service. The duties of this division are stated to be 'to study and investigate the cause, treatment, and prevention of venereal diseases; to cooperate with State departments of health in preventing and controlling these diseases; and to control and prevent their spread in interstate traffic.'

"The situation in respect of venereal diseases offers a strong argument in favor of the early creation of a Commonwealth Department of Public Health."

## DEATHS DURING WEEK ENDED DEC. 6, 1919.

From the "Weekly Health Index," Dec. 9, 1919, issued by the Bureau of the Census, Department of Commerce.

*Deaths from all causes in certain large cities of the United States during the week ended Dec. 6, 1919, infant mortality (per cent), annual death rates, and comparison with corresponding week of preceding years.*

| City. | Population July 1, 1918, estimated. | Week ended Dec. 6, 1919. | | Average annual death rate per 1,000.[2] | | Per cent of deaths under 1 year. | |
|---|---|---|---|---|---|---|---|
| | | Total deaths. | Death rate.[1] | | | Week ended Dec. 6, 1919. | Previous year or years.[3] |
| Albany, N. Y. | 112,565 | 41 | 19.0 | C | 14.1 | 7.3 | C 6.7 |
| Atlanta, Ga. | 201,732 | 64 | 16.5 | C | 19.1 | 20.3 | C 9.7 |
| Baltimore, Md. | [3] 669,981 | 209 | 16.3 | A | 16.9 | 11.5 | A 14.5 |
| Birmingham, Ala. | 197,670 | 69 | 18.2 | A | 16.4 | 11.6 | A 14.6 |
| Boston, Mass. | 785,245 | 187 | 12.4 | A | 16.2 | 18.2 | A 14.5 |
| Buffalo, N. Y. | 473,229 | 165 | 18.2 | A | 16.6 | 13.9 | A 14.6 |
| Cambridge, Mass. | 111,432 | 26 | 12.2 | A | 13.3 | 3.8 | A 16.5 |
| Chicago, Ill. | 2,596,681 | 604 | 12.1 | A | 13.1 | 16.9 | A 15.3 |
| Cincinnati, Ohio. | 418,022 | 132 | 16.5 | C | 15.2 | 9.1 | C 5.8 |
| Cleveland, Ohio. | 810,306 | 173 | 11.1 | C | 10.6 | 19.7 | C 16.5 |
| Columbus, Ohio. | 225,296 | 69 | 16.0 | C | 14.5 | 7.2 | C 11.5 |
| Dayton, Ohio. | 150,655 | 29 | 11.6 | A | 13.1 | 20.7 | A 8.9 |
| Denver, Colo. | ..... | 71 | ..... | A | 13.9 | 9.9 | ..... |
| Fall River, Mass. | 128,392 | 27 | 11.0 | C | 11.5 | 14.8 | C 25.0 |
| Grand Rapids, Mich. | 135,450 | 35 | 13.5 | C | 10.2 | 5.7 | C 11.5 |
| Indianapolis, Ind. | 290,389 | 83 | 14.9 | C | 17.3 | 14.5 | C 10.6 |
| Jersey City, N. J. | 318,770 | 73 | 11.9 | C | 15.2 | 17.8 | C 17.6 |
| Kansas City, Mo. | 313,785 | 86 | 14.3 | C | 14.2 | 9.3 | C 8.4 |
| Los Angeles, Calif. | 568,495 | 129 | 11.8 | A | 13.3 | 11.6 | A 9.5 |
| Louisville, Ky. | 242,707 | 75 | 16.1 | C | 14.9 | 13.3 | C 11.6 |
| Lowell, Mass. | 109,081 | 28 | 13.4 | A | 18.3 | 25.0 | A 20.5 |
| Memphis, Tenn. | 154,759 | 64 | 21.6 | C | 18.2 | 10.9 | C 5.7 |
| Milwaukee, Wis. | 453,481 | 94 | 10.8 | A | 11.8 | 20.2 | A 21.1 |
| Minneapolis, Minn. | 383,442 | 86 | 11.7 | C | 11.6 | 17.4 | C 13.3 |
| Nashville, Tenn. | 119,215 | 36 | 15.7 | C | 16.3 | 11.1 | C 10.8 |
| Newark, N. J. | 428,684 | 97 | 11.8 | A | 14.1 | 16.5 | ..... |
| New Haven, Conn. | 154,865 | 34 | 11.4 | C | 14.7 | 14.7 | C 18.6 |
| New Orleans, La. | 382,273 | 113 | 15.4 | A | 21.6 | 8.0 | A 12.7 |
| New York, N. Y. | 5,215,879 | 1,232 | 12.3 | A | 14.2 | 13.5 | A 14.6 |
| Oakland, Calif. | 214,206 | 42 | 10.2 | A | 11.8 | 7.1 | A 10.2 |
| Omaha, Nebr. | 180,264 | 26 | 7.5 | C | 15.2 | 26.9 | C 10.2 |
| Philadelphia, Pa. | 1,761,371 | 507 | 15.0 | | [4] 18.2 | 17.4 | [4] 12.4 |
| Pittsburgh, Pa. | 593,303 | 170 | 14.9 | C | 17.9 | 15.3 | C 15.9 |
| Providence, R. I. | 263,613 | 55 | 10.9 | C | 13.9 | 14.5 | C 5.8 |
| Richmond, Va. | 160,719 | 50 | 16.2 | C | 18.1 | 10.0 | C 10.9 |
| Rochester, N. Y. | 264,856 | 75 | 14.8 | C | 9.8 | 13.3 | C 14.3 |
| St. Louis, Mo. | 779,951 | 208 | 13.9 | C | 13.6 | 7.7 | C 8.5 |
| St. Paul, Minn. | 257,699 | 55 | 11.1 | C | 7.8 | 9.1 | C 10.5 |
| San Francisco, Calif. | 478,530 | 154 | 16.8 | C | 15.4 | 6.5 | C 7.2 |
| Seattle, Wash. | ..... | 60 | ..... | A | 9.1 | 8.3 | A 8.7 |
| Spokane, Wash. | ..... | 22 | ..... | C | 10.3 | ..... | C 3.2 |
| Syracuse, N. Y. | 161,404 | 56 | 18.1 | C | 12.5 | 23.2 | C 15.8 |
| Toledo, Ohio. | 262,234 | 61 | 12.1 | A | 12.9 | 9.8 | A 14.2 |
| Washington, D. C. | 401,681 | 113 | 14.7 | A | 17.0 | 10.6 | A 9.3 |
| Worcester, Mass. | 173,650 | 57 | 17.1 | C | 11.6 | 12.3 | C 21.1 |

[1] Annual rates per 1,000 estimated population.
[2] "A" indicates data for the corresponding week of the years 1913 to 1917, inclusive. "C" indicates data for the corresponding week of the year 1917.
[3] Population estimated as of July 1, 1919.
[4] Data are based on statistics of 1915, 1916, and 1917.

*Summary of information received by telegraph from industrial insurance companies for week ended Dec. 6, 1919.*

| | |
|---|---|
| Policies in force | 40,981,508 |
| Number of death claims | 7,585 |
| Death claims per 1,000 policies in force, annual rate | 9.7 |

# PREVALENCE OF DISEASE.

*No health department, State or local, can effectively prevent or control disease without knowledge of when, where, and under what conditions cases are occurring.*

## UNITED STATES.

### CURRENT STATE SUMMARIES.

### Telegraphic Reports for Week Ended December 13, 1919.

These reports are preliminary, and the figures are subject to change when later returns are received by the State health officers.

ALABAMA.

| | Cases. |
|---|---|
| Diphtheria | 8 |
| Malaria | 3 |
| Measles | 6 |
| Scarlet fever | 15 |
| Smallpox | 7 |
| Tuberculosis (pulmonary) | 4 |
| Typhoid fever | 3 |
| Venereal diseases | 67 |
| Whooping cough | 2 |

ARKANSAS.

| | |
|---|---|
| Cerebrospinal meningitis | 1 |
| Chancroid | 7 |
| Chicken pox | 27 |
| Diphtheria | 17 |
| Gonorrhea | 40 |
| Hookworm | 2 |
| Influenza | 38 |
| Malaria | 76 |
| Measles | 3 |
| Pellagra | 3 |
| Scarlet fever | 18 |
| Smallpox | 6 |
| Syphilis | 15 |
| Tuberculosis | 14 |
| Typhoid fever | 13 |
| Whooping cough | 2 |

CALIFORNIA.

| | |
|---|---|
| Influenza | 30 |
| Lethargic encephalitis | 11 |
| Smallpox: | |
| Alameda | 12 |
| Fillmore | 4 |
| Fresno County | 7 |
| Long Beach | 14 |
| Los Angeles | 7 |
| Los Angeles County | 6 |
| Napa | 30 |
| Napa County | 4 |
| Pittsburg | 15 |
| Riverside County | 6 |
| San Joaquin County | 5 |
| Scattering | 22 |
| Typhoid fever | 8 |

CONNECTICUT.

| | |
|---|---|
| Chicken pox | 35 |
| Diphtheria: | |
| Fairfield County— | |
| Bridgeport | 7 |
| Hartford County— | |
| Hartford | 17 |
| New Britain | 7 |
| New Haven County— | |
| New Haven | 12 |
| Wallingford | 5 |
| Waterbury | 22 |
| Scattering | 29 |
| Gonorrhea | 33 |
| Influenza | 3 |
| Lethargic encephalitis | 1 |
| Measles: | |
| Fairfield County— | |
| Bridgeport | 7 |
| Stamford | 8 |
| Stratford | 4 |
| Hartford County— | |
| New Britain | 6 |
| New Haven County— | |
| Hamden | 4 |
| Milford | 5 |
| New Haven | 63 |
| Orange | 6 |
| Scattering | 19 |
| Measles (German) | 1 |
| Mumps | 9 |
| Pneumonia | 9 |

CONNECTICUT—continued.

| | Cases. |
|---|---|
| Pollomyelitis | 1 |
| Scarlet fever: | |
| Hartford County— | |
| Hartford | 20 |
| New Haven County— | |
| Ansonia | 4 |
| Meriden | 5 |
| New Haven | 9 |
| Wallingford | 9 |
| Waterbury | 19 |
| Scattering | 20 |
| Syphilis | 23 |
| Tuberculosis | 32 |
| Typhoid fever | 2 |
| Whooping cough | 35 |

DELAWARE.

| | |
|---|---|
| Chicken pox | 2 |
| Diphtheria: | |
| Wilmington | 10 |
| Scattering | 7 |
| Gonorrhea | 10 |
| Influenza | 2 |
| Measles: | |
| Middletown | 4 |
| Wilmington | 4 |
| Scattering | 9 |
| Mumps | 4 |
| Pneumonia | 2 |
| Scarlet fever | 3 |
| Small pox | 3 |
| Syphilis | 3 |
| Typhoid fever | 2 |
| Whooping cough | 4 |

FLORIDA.

| | |
|---|---|
| Cerebrospinal meningitis | 1 |
| Diphtheria | 31 |
| Dysentery | 8 |
| Influenza | 9 |
| Malaria | 75 |
| Pneumonia | 23 |
| Scarlet fever | 5 |
| Smallpox | 2 |
| Typhoid fever | 17 |

GEORGIA.

| | |
|---|---|
| Chicken pox | 5 |
| Conjunctivitis (acute infectious) | 1 |
| Diphtheria | 25 |
| Dysentery (amebic) | 1 |
| Gonorrhea | 71 |
| Hookworm | 32 |
| Influenza | 45 |
| Malaria | 69 |
| Measles | 17 |
| Measles (German) | 1 |
| Mumps | 11 |
| Paratyphoid fever | 2 |
| Pneumonia (lobar) | 24 |
| Poliomyelitis | 2 |
| Scarlet fever | 40 |
| Septic sore throat | 26 |
| Smallpox | 15 |
| Syphilis | 42 |
| Tuberculosis (pulmonary) | 20 |
| Typhoid fever | 20 |
| Whooping cough | 13 |

ILLINOIS.

| Cerebrospinal meningitis: | Cases. |
|---|---|
| Chicago | 1 |
| Chancroid | 2 |
| Diphtheria: | |
| Anna | 8 |
| Belleville | 7 |
| Chicago | 185 |
| Granite City | 4 |
| Peoria | 9 |
| Streator | 4 |
| Scattering | 51 |
| Gonorrhea | 442 |
| Influenza: | |
| Chicago | 44 |
| Scattering | 10 |
| Lethargic encephalitis: | |
| Chicago | 4 |
| Poliomyelitis: | |
| Chicago | 1 |
| Mascouth | 1 |
| Scarlet fever: | |
| Chicago | 252 |
| Evanston | 10 |
| Galesburg | 4 |
| Rockford | 5 |
| Scattering | 79 |
| Smallpox: | |
| Kirkwood | 13 |
| Monmouth | 33 |
| Peoria | 5 |
| Roodhouse | 4 |
| Scattering | 29 |
| Syphilis | 322 |
| Typhoid fever | 21 |

INDIANA.

| | |
|---|---|
| Chancroid | 10 |
| Diphtheria: | |
| Allen County | 5 |
| Daviess County | 10 |
| Fountain County | 4 |
| Lake County | 6 |
| Marion County | 18 |
| Wayne County | 4 |
| Scattering | 24 |
| Gonorrhea | 250 |
| Influenza: | |
| Jackson County | 12 |
| Scattering | 17 |
| Measles: | |
| Cass County | 4 |
| Fayette County | 28 |
| Franklin County | 4 |
| Jackson County | 4 |
| Jay County | 7 |
| Lake County | 11 |
| Marion County | 5 |
| Porter County | 8 |
| Shelby County | 5 |
| Wayne County | 5 |
| Scattering | 14 |
| Poliomyelitis: | |
| Marion County | 1 |
| Rabies in animals | 2 |
| Scarlet fever: | |
| Allen County | 5 |
| Boone County | 4 |

INDIANA—continued.

| Scarlet fever—Continued. | Cases. |
|---|---|
| Daviess County | 9 |
| Dearborn County | 4 |
| Decatur County | 22 |
| Kosciusko County | 16 |
| Lake County | 7 |
| Marion County | 18 |
| Ripley County | 6 |
| Rush County | 4 |
| Tippecanoe County | 5 |
| Vigo County | 4 |
| Warren County | 5 |
| Wayne County | 8 |
| Scattering | 46 |
| Smallpox: | |
| Elkhart County | 5 |
| Fountain County | 7 |
| Franklin County | 5 |
| Hancock County | 21 |
| Laporte County | 5 |
| Montgomery County | 4 |
| Tippecanoe County | 9 |
| Sullivan County | 4 |
| Vigo County | 13 |
| Warren County | 4 |
| Warrick County | 6 |
| Scattering | 25 |
| Syphilis | 176 |
| Typhoid fever | 8 |

IOWA.

| | |
|---|---|
| Chancroid | 5 |
| Chicken pox | 6 |
| Diphtheria | 23 |
| Gonorrhea | 86 |
| Influenza: | |
| Benton | 4 |
| Ashton | 1 |
| Measles | 3 |
| Mumps | 9 |
| Scarlet fever | 6 |
| Smallpox: | |
| Cedar Falls | 9 |
| Davenport | 21 |
| Steamboat Rock | 5 |
| Scattering | 12 |
| Syphilis | 26 |

KANSAS.

| | |
|---|---|
| Diphtheria | 81 |
| Influenza | 15 |
| Scarlet fever | 103 |
| Smallpox | 29 |

LOUISIANA.

| | |
|---|---|
| Cerebrospinal meningitis | 1 |
| Chancroid | 16 |
| Diphtheria | 17 |
| Gonorrhea | 83 |
| Influenza | 20 |
| Plague (bubonic) | 2 |
| Smallpox | 6 |
| Syphilis | 29 |
| Typhoid fever | 14 |

MAINE.

| | Cases. |
|---|---|
| Chicken pox | 18 |
| Conjunctivitis | 1 |
| Diphtheria: | |
| Brunswick | 4 |
| Lewiston | 4 |
| Scattering | 3 |
| Gonorrhea | 43 |
| Influenza | 3 |
| Measles | 2 |
| Mumps | 10 |
| Pneumonia | 4 |
| Scarlet fever: | |
| Norway | 4 |
| Portland | 7 |
| Scattering | 12 |
| Smallpox: | |
| Van Buren | 6 |
| Scattering | 10 |
| Syphilis | 20 |
| Tuberculosis | 54 |
| Typhoid fever | 2 |
| Whooping cough | 21 |

MASSACHUSETTS.

| | |
|---|---|
| Anthrax | 3 |
| Cerebrospinal meningitis | 6 |
| Chicken pox | 279 |
| Conjunctivitis (suppurative) | 13 |
| Diphtheria | 219 |
| Gonorrhea | 131 |
| Influenza | 26 |
| Measles | 481 |
| Measles (German) | 16 |
| Mumps | 251 |
| Ophthalmia neonatorum | 24 |
| Pneumonia (lobar) | 86 |
| Poliomyelitis | 1 |
| Scarlet fever | 309 |
| Septic sore throat | 4 |
| Syphilis | 86 |
| Trachoma | 1 |
| Tuberculosis (pulmonary) | 135 |
| Tuberculosis (other forms) | 13 |
| Typhoid fever | 7 |
| Whooping cough | 257 |

MINNESOTA.

| | |
|---|---|
| Cerebrospinal meningitis | 2 |
| Chancroid | 14 |
| Gonorrhea | 114 |
| Poliomyelitis | 1 |
| Smallpox (new foci): | |
| Isanti County— | |
| Braham Village | 1 |
| Wyanett Township | 10 |
| Washington County— | |
| St. Paul Park Village | 3 |
| Syphilis | 96 |

MONTANA.

| | |
|---|---|
| Diphtheria | 10 |
| Influenza | 4 |
| Scarlet fever | 18 |
| Smallpox | 5 |
| Typhoid fever | 4 |

| NEBRASKA. | Cases. |
|---|---|
| Chicken pox | 22 |
| Diphtheria | 8 |
| Influenza | 2 |
| Measles | 4 |
| Scarlet fever: | |
| Falls City | 7 |
| Omaha | 14 |
| Wakefield | 15 |
| Scattering | 15 |
| Smallpox: | |
| Anselmo | 4 |
| Ashland | 6 |
| Lincoln | 6 |
| O'Neill | 4 |
| Scottsbluff | 4 |
| Verdon | 5 |
| Western | 7 |
| Scattering | 25 |
| Typhoid fever | 1 |
| Whooping cough | 12 |

| NEW JERSEY. | |
|---|---|
| Influenza | 28 |
| Pneumonia | 140 |

| NEW MEXICO. | |
|---|---|
| Chancroid | 1 |
| Chicken pox | 11 |
| Diphtheria: | |
| Hurley | 5 |
| Scattering | 4 |
| Gonorrhea | 10 |
| Influenza | 2 |
| Mumps | 16 |
| Pneumonia | 2 |
| Scarlet fever: | |
| Dulce | 8 |
| Hagerman | 4 |
| Scattering | 5 |
| Syphilis | 3 |
| Tuberculosis | 23 |
| Typhoid fever | 4 |
| Whooping cough | 7 |

NEW YORK

(Exclusive of New York City.)

| | |
|---|---|
| Diphtheria: | |
| Erie County | 102 |
| Scattering | 211 |
| Gonorrhea | 84 |
| Influenza | 41 |
| Measles | 392 |
| Pneumonia | 133 |
| Poliomyelitis: | |
| Buffalo | 1 |
| Elizabethtown | 1 |
| Poughkeepsie | 1 |
| Scarlet fever | 266 |
| Smallpox: | |
| Buffalo | 5 |
| Scattering | 2 |
| Syphilis | 211 |
| Typhoid fever | 19 |
| Whooping cough | 215 |

| NORTH CAROLINA. | Cases. |
|---|---|
| Cerebrospinal meningitis | 2 |
| Chancroid | 15 |
| Chicken pox | 87 |
| Diphtheria | 106 |
| Gonorrhea | 101 |
| Measles | 12 |
| Measles (German) | 2 |
| Pneumonia (broncho) | 13 |
| Pneumonia (lobar) | 35 |
| Scarlet fever | 48 |
| Septic sore throat | 8 |
| Smallpox | 22 |
| Syphilis | 34 |
| Trachoma | 1 |
| Typhoid fever | 27 |
| Whooping cough | 66 |

| OHIO. | |
|---|---|
| Diphtheria: | |
| Cincinnati | 21 |
| Scarlet fever: | |
| Cincinnati | 38 |
| Smallpox: | |
| Mansfield | 10 |
| Piqua | 10 |
| Typhoid fever: | |
| Lima | 7 |

| VERMONT. | |
|---|---|
| Chicken pox | 54 |
| Diphtheria | 5 |
| Gonorrhea | 7 |
| Measles | 53 |
| Mumps | 85 |
| Scarlet fever | 7 |
| Syphilis | 3 |
| Typhoid fever | 4 |
| Whooping cough | 47 |

| VIRGINIA. | |
|---|---|
| Smallpox: | |
| Botetourt County | 1 |
| Isle of Wight County | 2 |
| Rockingham County, several. | |

| WASHINGTON. | |
|---|---|
| Chicken pox | 32 |
| Diphtheria | 20 |
| Influenza | 1 |
| Measles | 64 |
| Mumps | 51 |
| Pneumonia | 3 |
| Scarlet fever | 38 |
| Smallpox | 67 |
| Tuberculosis | 28 |
| Typhoid fever | 10 |
| Whooping cough | 50 |

| WEST VIRGINIA. | |
|---|---|
| Cerebrospinal meningitis: | |
| Bluefield | 1 |
| Diphtheria: | |
| Charleston | 6 |
| Clarksburg | 5 |
| Fairmont | 4 |
| Martinsburg | 7 |
| Scattering | 8 |

WEST VIRGINIA—continued.

| | Cases. |
|---|---|
| Measles | 1 |
| Scarlet fever: | |
| Fairmont | 6 |
| Scattering | 12 |
| Typhoid fever | 6 |

WISCONSIN.

| | |
|---|---|
| Milwaukee: | |
| Cerebrospinal meningitis | 1 |
| Chicken pox | 71 |
| Diphtheria | 30 |
| Erysipelas | 4 |
| Measles | 41 |
| Scarlet fever | 29 |
| Smallpox | 3 |
| Tuberculosis | 16 |
| Typhoid fever | 1 |
| Whooping cough | 20 |

WISCONSIN—continued.

| | Cases. |
|---|---|
| Scattering: | |
| Chancroid | 3 |
| Chicken pox | 74 |
| Diphtheria | 41 |
| Gonorrhea | 76 |
| Influenza | 4 |
| Measles | 112 |
| Scarlet fever | 50 |
| Smallpox | 131 |
| Syphilis | 18 |
| Tuberculosis | 9 |
| Typhoid fever | 1 |
| Whooping cough | 26 |

## Kentucky Report for Week Ended December 6, 1919.

| | Cases. |
|---|---|
| Cerebrospinal meningitis: | |
| Jefferson County— | |
| Louisville | 1 |
| Lincoln County | 1 |
| Chickenpox | 39 |
| Diphtheria: | |
| Daviess County— | |
| Owensboro | 4 |
| Jefferson County— | |
| Louisville | 33 |
| Kenton County | 6 |
| Mercer County | 5 |
| Scattering | 20 |
| Dysentery | 3 |
| Erysipelas | 2 |
| Influenza: | |
| Barren County | 10 |
| Daviess County— | |
| Owensboro | 5 |
| Jefferson County— | |
| Louisville | 9 |
| Monroe County | 4 |
| Muhlenburg County | 4 |
| Scattering | 19 |
| Measles: | |
| Barren County | 5 |
| Clark County | 11 |
| Clinton County | 4 |
| Graves County | 5 |
| Kenton County | 4 |
| Marion County— | |
| Lebanon | 7 |
| Scott County | 14 |
| Scattering | 12 |
| Mumps | 7 |
| Ophthalmia neonatorum: | |
| Jefferson County— | |
| Louisville | 1 |

| | Cases. |
|---|---|
| Ophthalmia neonatorum—Continued. | |
| Whitley County— | |
| Williamsburg | 1 |
| Pneumonia: | |
| Allen County | 4 |
| Breckenridge County | 6 |
| Hopkins County | 5 |
| Jefferson County— | |
| Louisville | 10 |
| Nelson County | 4 |
| Scattering | 30 |
| Scarlet fever: | |
| Graves County | 5 |
| Jefferson County— | |
| Louisville | 6 |
| Simpson County | 5 |
| Scattering | 21 |
| Septic sore throat | 14 |
| Smallpox | 9 |
| Tonsillitis | 7 |
| Trachoma: | |
| Jefferson County— | |
| Louisville | 15 |
| Scattering | 4 |
| Tuberculosis: | |
| Jefferson County— | |
| Louisville | 10 |
| Monroe County | 5 |
| Scattering | 13 |
| Typhoid fever: | |
| Elliott County | 5 |
| Jefferson County— | |
| Louisville | 4 |
| Mason County— | |
| Maysville | 6 |
| Scattering | 19 |
| Whooping cough | 22 |

## SUMMARY OF CASES REPORTED MONTHLY BY STATES.

**Tables showing, by counties, the reported cases of cerebrospinal meningitis, malaria, pellagra, poliomyelitis, smallpox, and typhoid fever are published under the names of these diseases. (See names of these and other diseases in the table of contents.)**

**The following monthly State reports include only those which were received during the current week. These reports appear each week as received.**

| State. | Cerebrospinal meningitis. | Diphtheria. | Malaria. | Measles. | Pellagra. | Poliomyelitis. | Scarlet fever. | Smallpox. | Typhoid fever. |
|---|---|---|---|---|---|---|---|---|---|
| 1919. | | | | | | | | | |
| Arizona (November) | 1 | 11 | 2 | 4 | ..... | 2 | 6 | 9 | 1 |
| California (October) | 10 | 424 | 258 | 572 | 1 | 3 | 313 | 149 | 139 |
| Florida (November) | 3 | 101 | 520 | 14 | 10 | ..... | 30 | ..... | 40 |
| Massachusetts (November) | 16 | 983 | 4 | 1,059 | ..... | 6 | 1,054 | 2 | 83 |
| Minnesota (October) | 4 | 588 | ..... | 192 | ..... | 12 | 203 | 60 | 76 |
| Nebraska (November) | 5 | 42 | ..... | 4 | ..... | 4 | 84 | 245 | 18 |
| South Dakota (October) | 1 | 25 | ..... | 7 | ..... | 2 | 107 | 15 | 12 |
| Vermont (November) | ..... | 36 | ..... | 126 | ..... | ..... | 36 | ..... | 10 |
| Virginia (October) | 4 | 708 | 597 | 50 | 13 | 22 | 303 | 239 | 211 |

## RECIPROCAL NOTIFICATION.

### Massachusetts.

*Cases of communicable diseases referred during November, 1919, to other State health departments by department of health of the State of Massachusetts.*

| Disease and locality of notification. | Referred to health authority of— | Why referred. |
|---|---|---|
| Smallpox—Gardner | Provincial Health Officer, Quebec | Onset of case 16 days after leaving Portheuf, Quebec, where he was in contact with an unreported smallpox case. |
| Typhoid fever: | | |
| Waltham | State Board of Health, Concord, N. H. | Onset of case within 2 weeks after a visit to Keene, N. H. |
| Do | State Board of Health, Montpelier, Vt. | Onset of case 8 days after a 7-day trip through Vermont. |
| Newton | State Board of Health, Concord, N. H. | Onset of case 6 days after returning from a 3-week trip through New Hampshire. |
| Stoneham | State Department of Health, Hartford, Conn. | Onset of case within 14 days after arriving from Waterbury, Conn. |

### Minnesota.

*Cases of communicable diseases referred during October, 1919, to other State health departments by department of health of the State of Minnesota.*

| Disease and locality of notification. | Referred to health authority of— | Why referred. |
|---|---|---|
| Scarlet fever—Minneapolis Health Department, Hennepin County. | Fortuna, Divide County, N. Dak. | Developed scarlet fever Oct. 3, 6 days after leaving North Dakota. |
| Smallpox: | | |
| Minneapolis Health Department, Hennepin County. | Estherville, Emmet County, Iowa | Developed first symptoms of smallpox in Iowa before leaving for Minnesota. |
| Do | New Orleans, Orleans County, La. | Sick with smallpox while attending convention in New Orleans. |
| Do | Greenbay, Brown County, Wis. | Contracted smallpox while visiting in Wisconsin. |
| Trachoma—Lamberton Township, Redwood County. | Correctionville, Woodbury County, Iowa. | Case of trachoma traced in Iowa through investigation in Minnesota. |

## RECIPROCAL NOTIFICATION—Continued.

*Cases of communicable diseases referred during October, 1919, to other State health departments by department of health of the State of Minnesota*—Continued.

| Disease and locality of notification. | Referred to health authority of— | Why referred. |
|---|---|---|
| Tuberculosis: | | |
| Mayo Clinic, Rochester, Olmsted County. | England, Lonoke County, Ark.; Bloomington, McLean County, Ill.; Chicago, Cook County, Ill.; Decatur, Macon County, Ill.; Rockport, Pike County, Ill.; Sandwich, Dekalb County, Ill.; Marengo, McHenry County, Ill.; Fredericksburg, Washington County, Ind.; Remington, Jasper County, Ind.; Terre Haute, Vigo County, Ind.; Allison, Butler County, Iowa; Cherokee, Cherokee County, Iowa; Fort Dodge, Webster County, Iowa; Guttenberg, Clayton County, Iowa; Greene, Butler County, Iowa; Mason City, Cerro Gordo County, Iowa; Hawarden, Sioux County, Iowa; Onawa, Monona County, Iowa; Osceola, Clarke County, Iowa; Osage, Osage County, Iowa; Harris, Osceola County, Iowa; Spragueville, Jackson County, Iowa; Marshalltown, Marshall County, Iowa; Waterloo, Blackhawk County, Iowa; Yale, Guthrie County, Iowa; Calumet, Houghton County, Mich.; Iron Mountain, Dickinson County, Mich. Tipton, Moniteau County, Mo.; Livingston, Park County, Mont.; Saco, Phillips County, Mont.; Newport, Rock County, Nebr.; Forbes, Dickey County, N. Dak.; Lehigh, Stark County, N. Dak.; Zahl, Williams County, N. Dak.; Reynolds, Grand Forks County, N. Dak.; Cody, Mellette County, S. Dak.; Newell, Butte County, S. Dak.; Rapid City, Pennington County, S. Dak.; Sioux Falls, Minnehaha County, S. Dak.; Meadow, Perkins County, S. Dak.; Fort Worth, Tarrant County, Tex.; Grand Prairie, Dallas County, Tex.; Fairfield, Spokane County, Wash.; Prairie du Chien, Crawford County, Wis.; Kenosha, Kenosha County, Wis.; Sinsinawa, Grant County, Wis.; Milwaukee, Milwaukee County, Wis.; Stevens Point, Portage County, Wis.; Winnipeg, Manitoba, Canada; Lanark, Ontario, Canada; Fort William, Ontario, Canada; Sault Ste. Marie, Ontario, Canada; North Battleford, Saskatchewan, Canada; Fallon, Saskatchewan, Canada; Star City, Saskatchewan, Canada. | 27 advanced, 20 moderately advanced, 1 apparently cured, 1 apparently arrested, 1 incipient, 6 stage of disease not given, left Mayo Clinic for homes. |
| St. Paul Bureau of Health, Ramsey County. | Prescott, Pierce County, Wis.; Osceola, Polk County, Wis. | Tubercle bacilli demonstrated in 2 specimens of sputum collected by St. Paul physicians. |
| Typhoid fever: | | |
| Storden Township, Cottonwood County. | Sheldon, O'Brien County, Iowa..... | Child taken sick at Storden, was removed to her home in Iowa. |
| Warren, Marshall County..... | Pembina, Pembina County, N. Dak... | Lived in Pembina, N. Dak, three weeks previous to first symptoms. |
| Montevideo, Chippewa County | Farm near Fairdale, Walsh County, N. Dak. | Worked on farm in North Dakota three weeks previous to first symptoms. |
| Minneapolis Health Department, Hennepin County. | Lidgerwood, Richland County, N. Dak. | Worked in North Dakota three weeks previous to first symptoms. |

## ANTHRAX.

### Massachusetts, New York, Vermont, and Wisconsin.

During the month of November, 1919, two cases of anthrax were reported in Massachusetts and one in Vermont. During the week ended November 29, 1919, one case of anthrax was reported at Milwaukee, Wis., and one case and one death were reported at New York, N. Y.

## CEREBROSPINAL MENINGITIS.

### State Reports for October and November, 1919.

| Place. | New cases reported. |
|---|---|
| Arizona (November): | |
| Claypool | 1 |
| California (October): | |
| Los Angeles County | 1 |
| Los Angeles | 1 |
| San Diego County— | |
| San Diego | 1 |
| San Francisco | 4 |
| San Joaquin County— | |
| Stockton | 1 |
| Santa Clara County— | |
| Palo Alto | 1 |
| Stanislaus County— | |
| Modesto | 1 |
| Total | 10 |
| Florida (November): | |
| Jacksonville | 2 |
| Gadsden County | 1 |
| Total | 3 |
| Massachusetts (November): | |
| Bristol County— | |
| New Bedford | 1 |
| Hampshire County— | |
| Southampton (town) | 1 |
| Middlesex County— | |
| Billerica (town) | 1 |
| Arlington (town) | 1 |
| Framingham (town) | 1 |
| Suffolk County— | |
| Boston | 9 |
| Massachusetts (November)—Continued. | |
| Worcester County— | |
| Gardner (town) | 1 |
| Leominster | 1 |
| Total | 16 |
| Minnesota (October): | |
| Becker County— | |
| Cuba Township | 1 |
| Lesueur County— | |
| Cordova Township | 1 |
| Polk County— | |
| Crookston | 2 |
| Total | 4 |
| Nebraska (November): | |
| Dodge County | 1 |
| Douglas County | 3 |
| Scotts Bluff County | 1 |
| Total | 5 |
| South Dakota (October): | |
| Brown County | 1 |
| Virginia (October): | |
| Accomac County | 1 |
| Carroll County | 1 |
| Halifax County | 1 |
| Scott County | 1 |
| Total | 4 |

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Deaths. |
|---|---|---|
| Allentown, Pa | 1 | |
| Atlanta, Ga | 1 | |
| Baltimore, Md | 2 | 1 |
| Buffalo, N. Y | 1 | |
| Chicago, Ill | 3 | 1 |
| Cincinnati, Ohio | 1 | |
| Eau Claire, Wis | 1 | |
| Elyria, Ohio | | 1 |
| Framingham, Mass | 1 | |
| Gary, Ind | | 1 |
| Huntington, W. Va | | 2 |
| Milwaukee, Wis | 1 | |
| Montclair, N. J | 1 | |
| Nashville, Tenn | 2 | |
| Newark, N. J | | 1 |
| New York, N. Y | 3 | 1 |
| Oklahoma City, Okla | 1 | 1 |
| Parsons, Kans | 1 | 1 |
| Passaic, N. J | | 1 |
| Pawtucket, R. I | | 2 |
| Philadelphia, Pa | 1 | 1 |
| Port Huron, Mich | | 1 |
| Rochester, N. Y | | 1 |
| St. Joseph, Mo | 1 | 1 |
| St. Paul, Minn | 1 | 1 |
| Topeka, Kans | | 1 |
| York, Pa | 1 | |

## DENGUE.

### Florida—November, 1919.

During November, 1919, two cases of dengue were reported in Florida.

## DIPHTHERIA.

See Telegraphic weekly reports from States, page 2916; Monthly summaries by States, page 2921; and Weekly reports from cities, page 2936.

## GLANDERS.

### Massachusetts—November, 1919.

During the month of November, 1919, one case of glanders was reported in Massachusetts.

## INFLUENZA.

### Cases Reported by State Health Officers, Week Ended Dec. 13, 1919

| | Cases. | | Cases. |
|---|---|---|---|
| Arkansas | 38 | Louisiana | 20 |
| California | 30 | Maine | 3 |
| Connecticut | 3 | Massachusetts | 26 |
| Delaware | 2 | Montana | 4 |
| Florida | 9 | Nebraska | 2 |
| Georgia | 45 | New Jersey | 28 |
| Illinois | 54 | New Mexico | 2 |
| Indiana | 29 | New York (exclusive of New York City) | 41 |
| Iowa | 5 | Washington | 1 |
| Kansas | 15 | Wisconsin | 4 |

## LEPROSY.

### Charlotte, N. C., and St. Joseph, Mo.

During the week ended November 29, 1919, one case of leprosy was reported at Charlotte, N. C., and one case was reported at St. Joseph, Mo.

## LETHARGIC ENCEPHALITIS.

### California—October, 1919.

During the month of October, 1919, three cases of lethargic encephalitis were reported in California.

## MALARIA.

### State Reports for October and November, 1919.

| Place. | New cases reported. |
|---|---|
| Arizona (November): | |
| Maricopa County— | |
| Goodyear | 2 |
| California (October): | |
| Butte County— | |
| Chico | 1 |
| Calaveras County— | |
| Angels Camp | 2 |
| Colusa County | 10 |
| Colusa | 6 |
| Fresno County | 2 |
| Clovis | 1 |
| Glenn County— | |
| Orland | 1 |
| Imperial County— | |
| Calexico | 1 |
| Kern County | 4 |
| Los Angeles County— | |
| Long Beach | 1 |
| Los Angeles | 2 |
| Merced County— | |
| Los Banos | 3 |
| Orange County— | |
| Santa Ana | 1 |
| Placer County | 2 |
| Lincoln | 30 |
| Sacramento County | 3 |
| San Bernardino County— | |
| Redlands | 1 |
| San Francisco | 2 |
| San Joaquin County— | |
| Manteca | 1 |
| Stockton | 1 |
| Shasta County | 166 |
| Kennett | 1 |
| Redding | 5 |
| Solano County | 1 |
| Tehama County | 2 |
| Red Bluff | 8 |
| Total | 258 |
| Florida (November): | |
| Alachua County | 2 |
| Bay County | 3 |
| Bradford County | 2 |
| Brevard County | 2 |
| Citrus County | 33 |
| Clay County | 6 |
| Columbia County | 2 |
| Dade County | 1 |
| Miami | 1 |
| DeSoto County | 21 |
| Duval County | 33 |
| Jacksonville | 38 |
| Escambia County | 1 |
| Pensacola | 8 |
| Franklin County | 9 |
| Gadsden County | 49 |
| Hamilton County | 8 |
| Hillsboro County | 5 |
| Tampa | 11 |
| Holmes County | 1 |
| Jackson County | 18 |
| Jefferson County | 10 |
| Lafayette County | 74 |
| Lake County | 3 |
| Leon County | 24 |
| Levy County | 19 |
| Liberty County | 3 |
| Madison County | 17 |
| Manatee County | 7 |
| Marion County | 24 |
| Nassau County | 3 |
| Okaloosa County | 1 |
| Okeechobee County | 13 |
| Orange County | 2 |
| Palm Beach County | 6 |
| Pasco County | 8 |
| Pinellas County | 13 |
| Polk County | 7 |
| Putnam County | 1 |
| St. Johns County | 6 |
| Seminole County | 1 |
| Sumter County | 1 |
| Suwannee County | 14 |
| Taylor County | 3 |
| Volusia County | 5 |
| Walton County | 1 |
| Total | 520 |
| Massachusetts (November): | |
| Middlesex County— | |
| Newton | 1 |
| Norfolk County— | |
| Dedham (town) | 1 |
| Weymouth (town) | 1 |
| Suffolk County— | |
| Winthrop (town) | 1 |
| Total | 4 |
| Virginia (October): | |
| Accomac County | 22 |
| Parksley | 4 |
| Bedford County | 8 |
| Botetourt County— | |
| Troutville | 1 |
| Brunswick County | 13 |
| Buckingham County | 2 |
| Caroline County | 4 |
| Charles City County | 1 |
| Ruthville | 1 |
| Charlotte County | 8 |
| Chesterfield County— | |
| Winterpack | 2 |
| Cumberland County | 1 |
| Dinwiddie County | 1 |
| Elizabeth City County— | |
| Phoebus | 1 |
| Hampton | 1 |
| Gloucester County | 3 |
| Greensville County | 15 |
| Emporia | 9 |
| North Emporia | 5 |
| Halifax County | 5 |
| Houston | 1 |
| Hanover County | 28 |
| Henrico County | 9 |
| Henry County | 1 |
| Martinsville | 1 |
| Isle of Wight County | 20 |
| James City County | 25 |
| King and Queen County | 6 |
| King William County | 2 |
| West Point | 31 |
| Lancaster County | 23 |
| Loudoun County | 1 |
| Louisa County | 2 |
| Lunenburg County | 2 |
| Victoria | 2 |
| Mathews County | 1 |
| Mecklenburg County | 8 |
| Chase City | 1 |
| Middlesex County | 9 |
| Nansemond County | 2 |
| Suffolk | 27 |
| Nelson County | 1 |
| Northampton County | 35 |
| Cape Charles | 9 |

## MALARIA—Continued.

### State Reports for October and November, 1919—Continued.

| Place. | New cases reported. |
|---|---|
| Virginia (October)—Continued. | |
| Northumberland County | 21 |
| Nottoway County | 1 |
| Page County | 1 |
| Pittsylvania County | 17 |
| Ringgold | 2 |
| Powhatan County | 7 |
| Princess Anne County | 20 |
| Vine | 1 |
| Prince Edward County— | |
| Farmville | 1 |
| Prince George County | 10 |
| Prince William County | 2 |
| Richmond County | 12 |
| Rockingham County— | |
| Dayton | 2 |
| Southampton County | 22 |
| Drewrysville | 3 |
| Franklin | 3 |
| Spottsylvania County | 3 |
| Stafford County | 6 |
| Surry County | 20 |
| Surry | 6 |
| Sussex County | 31 |
| Warwick County | 20 |
| Camp Eustis | 13 |
| Newport News | 1 |
| Westmoreland County | 2 |
| Wise County— | |
| Stonega | 2 |
| York County | 14 |
| Total | 507 |

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Death. |
|---|---|---|
| Alexandria, La | 50 | ..... |
| Baltimore, Md | 3 | 1 |
| Birmingham, Ala | ..... | 1 |
| Brunswick, Ga | 2 | 2 |
| Charleston, S. C | ..... | 1 |
| Charlotte, N. C | ..... | 1 |
| Chicago, Ill | ..... | 1 |
| Columbus, Ga | 1 | 1 |
| Dallas, Tex | 11 | 1 |
| New York, N. Y | 1 | ..... |
| Pine Bluff, Ark | 1 | ..... |
| Savannah, Ga | 20 | 1 |
| Tuscaloosa, Ala | 3 | ..... |
| Wilmington, N. C | ..... | 3 |

## MEASLES.

See Telegraphic weekly reports from States, page 2916; Monthly summaries by States, page 2921; and Weekly reports from cities, page 2936.

## PELLAGRA.

### State Reports for October and November, 1919.

| Place. | New cases reported. |
|---|---|
| California (October): | |
| Sonoma County | 1 |
| Florida (November): | |
| Alachua County | 1 |
| DeSoto County | 1 |
| Escambia County— | |
| Pensacola | 1 |
| Holmes County | 1 |
| Jefferson County | 1 |
| Levy County | 1 |
| Madison County | 1 |
| Pasco County | 1 |
| Santa Rosa County | 1 |
| Volusia County | 1 |
| Total | 10 |
| Virginia (October): | |
| Dinwiddie County— | |
| Petersburg | 1 |
| Essex County | 1 |
| Lee County | 1 |
| Mecklenburg County | 2 |
| Montgomery County | 1 |
| Russell County | 1 |
| Southampton County | 2 |
| Surry County | 1 |
| Washington County | 2 |
| Wise County— | |
| Norton | 1 |
| Total | 13 |

## PELLAGRA—Continued.

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Deaths. | Place. | Cases. | Deaths. |
|---|---|---|---|---|---|
| Birmingham, Ala. | | 1 | High Point, N. C. | | 2 |
| Charleston, S. C. | | 2 | Nashville, Tenn. | | 1 |
| Chattanooga, Tenn. | | 1 | Richmond, Va. | | 1 |
| Dallas, Tex. | | 1 | Waco, Tex. | 1 | |
| Durham, N. C. | 1 | | | | |

## PNEUMONIA (ALL FORMS).

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Deaths. | Place. | Cases. | Deaths. |
|---|---|---|---|---|---|
| Akron, Ohio | 1 | | Fort Worth, Tex. | 3 | 3 |
| Alliance, Ohio | | 3 | Freeport, Ill. | 5 | |
| Alpena, Mich. | 1 | | Fremont, Nebr. | | 1 |
| Alton, Ill. | 3 | | Galesburg, Ill. | | 1 |
| Anderson, Ind. | | 1 | Grand Rapids, Mich. | 3 | 2 |
| Ann Arbor, Mich. | 1 | | Green Bay, Wis. | | 2 |
| Ansonia, Conn. | | 1 | Hackensack, N. J. | | 1 |
| Appleton, Wis. | | 1 | Hammond, Ind. | | 1 |
| Atlanta, Ga. | 1 | 8 | Harrison, N. J. | 1 | |
| Atlantic City, N. J. | 1 | 1 | Hartford, Conn. | | 1 |
| Attleboro, Mass. | 1 | | Haverhill, Mass. | 2 | |
| Aurora, Ill. | 1 | | Highland Park, Mich. | 4 | 2 |
| Austin, Tex. | | 1 | Hoboken, N. J. | | 1 |
| Baltimore, Md. | 33 | 23 | Holyoke, Mass. | | 3 |
| Beatrice, Nebr. | | 1 | Huntington, W. Va. | | 3 |
| Beaumont, Tex. | | 1 | Independence, Mo. | 2 | 2 |
| Bedford, Ind. | | 1 | Indianapolis, Ind. | | 5 |
| Beloit, Wis. | | 1 | Jamestown, N. Y. | 2 | 1 |
| Berkeley, Calif. | 1 | 3 | Janesville, Wis. | | 1 |
| Berlin, N. H. | 2 | 2 | Jersey City, N. J. | 11 | |
| Beverly, Mass. | 1 | 1 | Kalamazoo, Mich. | 2 | |
| Binghamton, N. Y. | 3 | | Kansas City, Kans. | 3 | |
| Birmingham, Ala. | | 4 | Kansas City, Mo. | 10 | 6 |
| Boston, Mass. | 20 | 18 | Kearny, N. J. | 1 | 1 |
| Bridgeport, Conn. | | 6 | Kewanee, Ill. | 2 | 3 |
| Brookline, Mass. | 2 | 1 | Lackawanna, N. Y. | 2 | |
| Buffalo, N. Y. | 20 | 6 | La Fayette, Ind. | | 1 |
| Butte, Mont. | | 1 | Lawrence, Mass. | 2 | 4 |
| Cairo, Ill. | | 1 | Lima, Ohio | | 1 |
| Cambridge, Mass. | 2 | 4 | Lincoln, Nebr. | 1 | 1 |
| Camden, N. J. | 3 | | Long Beach, Calif. | 4 | 3 |
| Charleston, S. C. | | 1 | Los Angeles, Calif. | 21 | 9 |
| Charlotte, N. C. | | 1 | Louisville, Ky. | 2 | 9 |
| Chelsea, Mass. | 1 | 2 | Lowell, Mass. | 4 | 3 |
| Chicago, Ill. | 149 | 57 | Lynchburg, Va. | | 1 |
| Chicopee, Mass. | | 1 | Lynn, Mass. | 1 | 3 |
| Chillicothe, Ohio | | 1 | Macon, Ga. | 5 | 4 |
| Cincinnati, Ohio | 4 | 6 | Madison, Wis. | | 2 |
| Columbus, Ga. | 6 | 1 | Manchester, N. H. | 1 | 1 |
| Columbus, Ohio | | 6 | Marion, Ohio | 1 | |
| Cortland, N. Y. | 1 | | Marquette, Mich. | 1 | |
| Cranston, R. I. | 1 | 1 | Mason City, Iowa | | 1 |
| Cumberland, Md. | 6 | | Medford, Mass. | 2 | 1 |
| Dallas, Tex. | 4 | 3 | Middletown, N. Y. | 1 | |
| Dayton, Ohio | 1 | | Milwaukee, Wis. | | 7 |
| Decatur, Ill. | | 2 | Minneapolis, Minn. | | 5 |
| Denver, Colo. | | 8 | Mobile, Ala. | | 1 |
| Detroit, Mich. | 22 | 20 | Montclair, N. J. | 5 | 3 |
| Duluth, Minn. | 1 | 1 | Montgomery, Ala. | | 2 |
| East Chicago, Ind. | | 1 | Morgantown, W. Va. | 2 | 1 |
| Easthampton, Mass. | 2 | 2 | Morristown, N. J. | 1 | |
| East Orange, N. J. | | 1 | Muncie, Ind. | 1 | 1 |
| East St. Louis, Ill. | | 1 | Nashville, Tenn. | | 4 |
| Elgin, Ill. | | 1 | Newark, N. J. | [1]38 | 7 |
| Elkhart, Ind. | | 1 | New Bedford, Mass. | 1 | 6 |
| Elmira, N. Y. | 1 | 2 | New Britain, Conn. | | 2 |
| El Paso, Tex. | 1 | 1 | Newburgh, N. Y. | 1 | 1 |
| Elyria, Ohio | | 2 | Newburyport, Mass. | 1 | |
| Fall River, Mass. | 4 | 5 | New Haven, Conn. | | 6 |
| Fargo, N. Dak. | | 1 | New Orleans, La. | | 10 |
| Fort Wayne, Ind. | | 4 | New York, N. Y. | 186 | 116 |

[1] Lobar.

## PNEUMONIA (ALL FORMS)—Continued.

### City Reports for Week Ended Nov. 29, 1919—Continued.

| Place. | Cases. | Deaths. |
|---|---|---|
| Norfolk, Va. | 3 | |
| Norwalk, Conn. | | 1 |
| Norwood, Ohio. | | 1 |
| Oakland, Calif. | 1 | 4 |
| Oak Park, Ill. | | 2 |
| Ogden, Utah. | 2 | 2 |
| Olean, N. Y. | | 2 |
| Omaha, Nebr. | | 6 |
| Orange, N. J. | 1 | |
| Oshkosh, Wis. | | 1 |
| Parkersburg, W. Va. | 2 | 1 |
| Pasadena, Calif. | | 1 |
| Passaic, N. J. | | 1 |
| Paterson, N. J. | 3 | |
| Peoria, Ill. | | 4 |
| Philadelphia, Pa. | 60 | 36 |
| Piqua, Ohio. | 1 | 2 |
| Pittsfield, Mass. | 1 | |
| Plainfield, N. J. | 2 | 2 |
| Port Huron, Mich. | 1 | 1 |
| Portland, Oreg. | | 7 |
| Portsmouth, Va. | | 3 |
| Poughkeepsie, N. Y. | 1 | 1 |
| Providence, R. I. | | 2 |
| Quincy, Mass. | 1 | |
| Raleigh, N. C. | | 1 |
| Redlands, Calif. | | 1 |
| Richmond, Va. | 1 | 9 |
| Riverside, Calif. | 2 | 1 |
| Roanoke, Va. | 3 | |
| Rochester, N. Y. | 6 | 1 |
| Rockford, Ill. | | 2 |
| Rocky Mount, N. C. | | 2 |
| Sacramento, Calif. | 1 | 5 |
| Saginaw, Mich. | 1 | |
| St. Joseph, Mo. | | 4 |
| St. Paul, Minn. | 1 | 1 |
| Salem, Oreg. | | 2 |
| San Antonio, Tex. | 12 | |
| San Diego, Calif. | 2 | 1 |
| Sandusky, Ohio. | 3 | |
| San Francisco, Calif. | | 10 |
| Saugus, Mass. | 1 | 2 |
| Savannah, Ga. | | 2 |
| Schenectady, N. Y. | 4 | 1 |
| Sioux Falls, S. Dak. | 1 | 1 |
| South Bend, Ind. | | 1 |
| Springfield, Mass. | 1 | 5 |
| Springfield, Mo. | | 1 |
| Springfield, Ohio. | | 2 |
| Staunton, Va. | | 3 |
| Steubenville, Ohio. | 1 | |
| Stockton, Calif. | | 1 |
| Syracuse, N. Y. | | 7 |
| Taunton, Mass. | 1 | 1 |
| Topeka, Kans. | | 1 |
| Traverse City, Mich. | | 2 |
| Trenton, N. J. | 6 | 4 |
| Troy, N. Y. | 2 | 3 |
| Waco, Tex. | 3 | |
| Washington, D. C. | | 6 |
| Wausau, Wis. | | 1 |
| West New York, N. J. | | 1 |
| Wheeling, W. Va. | | 2 |
| White Plains, N. Y. | | 1 |
| Wichita, Kans. | 2 | 2 |
| Wilmington, Del. | | 3 |
| Winston-Salem, N. C. | | 3 |
| Worcester, Mass. | 6 | 7 |
| Yonkers, N. Y. | 1 | 1 |
| Youngstown, Ohio. | | 5 |
| Zanesville, Ohio. | | 1 |

## POLIOMYELITIS (INFANTILE PARALYSIS).

### State Reports for October and November, 1919.

| Place. | New cases reported. |
|---|---|
| Arizona (November): | |
| Maricopa County— | |
| Phoenix | 1 |
| Puma County— | |
| Ajo | 1 |
| Total | 2 |
| California (October): | |
| Los Angeles County | 1 |
| Los Angeles | 2 |
| Total | 3 |
| Massachusetts (November): | |
| Berkshire County— | |
| Great Barrington (town) | 1 |
| Essex County— | |
| Lynn | 1 |
| Middlesex County— | |
| Medford | 1 |
| Newton | 1 |
| Somerville | 1 |
| Suffolk County— | |
| Boston | 1 |
| Total | 6 |
| Minnesota (October): | |
| Crow Wing County— | |
| Brainerd | 1 |
| Faribault County— | |
| Elmore | 1 |
| Goodhue County— | |
| Zumbrota | |
| Hennepin County— | |
| Minneapolis | 1 |
| Ottertail County— | |
| Fergus Falls | 1 |
| Girard Township | 1 |
| Henning Township | 1 |
| Pipestone County— | |
| Jasper | 1 |
| Ramsey County— | |
| St. Paul | 1 |
| Redwood County— | |
| Paxton Township | 1 |
| St. Louis County— | |
| Duluth | 1 |
| Winona County— | |
| Lewiston | 1 |
| Total | 12 |

## POLIOMYELITIS (INFANTILE PARALYSIS)—Continued.

### State Reports for October and November, 1919—Continued.

| Place. | New cases reported. |
|---|---|
| Nebraska (November): | |
| Box Butte County | 2 |
| Sarpy County | 1 |
| Thurston County | 1 |
| Total | 4 |
| South Dakota (October): | |
| Dewey County | 1 |
| Kingsbury County | 1 |
| Total | 2 |
| Virginia (October): | |
| Brunswick County | 1 |
| Campbell County | 3 |
| Henrico County— | |
| Richmond | 2 |
| Pittsylvania County | 6 |
| Ringgold | 1 |
| Prince George County | 1 |
| Roanoke County | 3 |
| Roanoke | 2 |
| Spottsylvania County | 1 |
| Tazewell County | 1 |
| Warwick County— | |
| Newport News | 1 |
| Total | 22 |

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Deaths. |
|---|---|---|
| Beloit, Wis | 1 | |
| Butler, Pa | 1 | |
| Charleston, S. C | | 1 |
| Eau Claire, Wis | 1 | |
| Joplin, Mo | 1 | |
| Medford, Mass | 1 | |
| Newton, Mass | 1 | |

## RABIES IN ANIMALS.

### City Reports for Week Ended Nov. 29, 1919.

During the week ended November 29, 1919, there were four cases of rabies in animals reported at Akron, Ohio, one case at East Liverpool, Ohio, and one case at Fort Dodge, Iowa.

## RABIES IN MAN.

### New Orleans, La.—Week Ended Nov. 29, 1919.

During the week ended November 29, 1919, one fatal case of rabies in man was reported at New Orleans, La.

## SCARLET FEVER.

See Telegraphic weekly reports from States, p. 2916; Monthly summaries by States p. 2921; and Weekly reports from cities, p. 2936.

## SMALLPOX.

### State Reports for October and November, 1919—Vaccination Histories.

| Place. | New cases reported. | Deaths. | Vaccination history of cases. | | | |
|---|---|---|---|---|---|---|
| | | | Vaccinated within 7 years preceding attack. | Last vaccinated more than 7 years preceding attack. | Never successfully vaccinated. | History not obtained or uncertain. |
| **Arizona (November):** | | | | | | |
| Maricopa County— | | | | | | |
| Phoenix | 3 | | 2 | | | 1 |
| Yavapai County— | | | | | | |
| Prescott | 6 | | | | 3 | 3 |
| Total | 9 | | 2 | | 3 | 4 |
| **California (October):** | | | | | | |
| Alameda County— | | | | | | |
| Alameda | 3 | | | | 3 | |
| Oakland | 1 | | | | 1 | |
| Amador County— | | | | | | |
| Jackson | 13 | | 2 | | 11 | |
| Butte County— | | | | | | |
| Chico | 1 | | | | 1 | |
| Contra Costa County— | | | | | | |
| Martinez | 1 | | | | 1 | |
| Del Norte County— | | | | | | |
| Crescent City | 1 | | | | 1 | |
| Fresno County | 1 | | | | 1 | |
| Humboldt County | 13 | | | 1 | 11 | 1 |
| Arcata | 2 | | | | 2 | |
| Blue Lake | 1 | | | | 1 | |
| Eureka | 18 | | 1 | 3 | 13 | |
| Los Angeles County | 4 | | | | 4 | |
| Long Beach | 1 | | | | 1 | |
| Los Angeles | 16 | | | 4 | 12 | |
| Whittier | 4 | | | | 4 | |
| Madera County | 3 | | | | 3 | |
| Monterey County— | | | | | | |
| Salinas | 1 | | | | 1 | |
| Orange County— | | | | | | |
| Brea | 4 | | | 1 | 2 | 1 |
| Riverside County | 12 | | | | 12 | |
| Blythe | 6 | | | 1 | 5 | |
| Sacramento County— | | | | | | |
| Sacramento | 1 | | 1 | | | |
| San Bernardino County | 3 | | | | 3 | |
| Chino | 1 | | | | 1 | |
| San Diego County— | | | | | | |
| San Diego | 4 | | 1 | | 3 | |
| San Francisco | 2 | | | | 2 | |
| San Joaquin County | 3 | | | | 3 | |
| Manteca | 5 | | | | 5 | |
| Stockton | 3 | | | | 3 | |
| Santa Barbara County | 1 | | | | 1 | |
| Shasta County | 10 | | | | 10 | |
| Sonoma County | 1 | | 1 | | | |
| Ventura County | 5 | | | | 1 | 4 |
| Fillmore | 4 | | | | 4 | |
| Total | 149 | | 6 | 10 | 126 | 7 |
| **Massachusetts (November):** | | | | | | |
| Worcester County— | | | | | | |
| Gardner (town) | 2 | | | 2 | | |
| **Minnesota (October):** | | | | | | |
| Becker County— | | | | | | |
| Cuba Township | 2 | | | | 2 | |
| Riceville Township | 1 | | | | 1 | |
| Lake Park Township | 2 | | | | 2 | |
| Bigstone County— | | | | | | |
| Prior Township | 1 | | | 1 | | |
| Faribault County— | | | | | | |
| Blue Earth | 2 | | | | 2 | |
| Emerald Township | 1 | | | | 1 | |
| Fillmore County— | | | | | | |
| Fillmore Township | 1 | | | | 1 | |
| Freeborn County— | | | | | | |
| Myrtle | 1 | | | | 1 | |

## SMALLPOX—Continued.

### State Reports for October and November, 1919—Vaccination Histories—Contd.

| Place. | New cases reported. | Deaths. | Vaccination history of cases. | | | |
|---|---|---|---|---|---|---|
| | | | Vaccinated within 7 years preceding attack. | Last vaccinated more than 7 years preceding attack. | Never successfully vaccinated. | History not obtained or uncertain. |
| Minnesota (October)—Contd. | | | | | | |
| Kanabec County— | | | | | | |
| Knife Lake Township | 1 | | | 1 | | |
| Lac qui Parle County— | | | | | | |
| Dawson | 1 | | | | 1 | |
| Olmsted County— | | | | | | |
| Rochester | 1 | | | | | 1 |
| Otter tail County— | | | | | | |
| Fergus Falls | 18 | | | | 18 | |
| Pennington County— | | | | | | |
| Thief River Falls | 1 | | | | 1 | |
| St. Louis County— | | | | | | |
| Kelley Lake | 2 | | | | 2 | |
| Stearns County— | | | | | | |
| Waite Park | 12 | | | | 12 | |
| Steele County— | | | | | | |
| Owatonna | 2 | | | | 1 | 1 |
| Todd County— | | | | | | |
| Staples | 5 | | | | 5 | |
| Wabasha County— | | | | | | |
| Millville Township | 1 | | | | 1 | |
| Oakwood Township | 1 | | | | 1 | |
| Zumbro Falls | 2 | | | | 2 | |
| Wright County— | | | | | | |
| Cokato Township | 2 | | | | 2 | |
| Total | 60 | | | 2 | 56 | 2 |

### State Reports for October and November, 1919.

| Place. | Cases. | Deaths. |
|---|---|---|
| Nebraska (November): | | |
| Adams County | 3 | |
| Antelope County | 4 | |
| Box Butte County | 34 | |
| Buffalo County | 6 | |
| Burt County | 2 | |
| Cheyenne County | 31 | |
| Dodge County | 3 | |
| Douglas County | 14 | |
| Dundy County | 1 | |
| Gosper County | 4 | |
| Hall County | 1 | |
| Holt County | 4 | |
| Kearney County | 2 | |
| Knox County | 9 | |
| Lancaster County | 19 | |
| Lincoln County | 1 | |
| Nemaha County | 3 | |
| Richardson County | 64 | |
| Saunders County | 23 | |
| Scotts Bluff County | 3 | |
| Sheridan County | 3 | |
| Thayer County | 1 | |
| Thomas County | 4 | |
| York County | 6 | |
| Total | 245 | |
| South Dakota (October): | | |
| Charles Mix County | 1 | |
| Davison County | 1 | |
| Jerauld County | 2 | |
| Lawrence County | 1 | |
| Minnehaha County | 1 | |
| Spink County | 1 | |
| Sully County | 3 | |
| Yankton County | 5 | |
| Total | 15 | |

| Place. | Cases. | Deaths. |
|---|---|---|
| Virginia (October): | | |
| Alleghany County | 12 | |
| Covington | 6 | |
| Bath County | 2 | |
| Bedford County | 6 | |
| Campbell County | 8 | |
| Green County | 28 | |
| Hanover County | 3 | |
| Henrico County | 1 | |
| Richmond | 1 | |
| Louisa County | 11 | |
| Montgomery County— | | |
| Lafayette | 35 | |
| Radford | 17 | |
| Norfolk County— | | |
| Portsmouth | 7 | |
| Norfolk | 16 | |
| Patrick County | 1 | |
| Princess Anne County | 1 | |
| Prince George County | 1 | |
| Pulaski County | 12 | |
| Rockingham County | 26 | |
| Scott County | 1 | |
| Southampton County | 25 | |
| Spottsylvania County— | | |
| Fredericksburg | 8 | |
| Stafford County | 9 | |
| Surry County | 1 | |
| Wise County | 1 | |
| Total | 239 | |

## SMALLPOX—Continued.

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Deaths. | Place. | Cases. | Deaths. |
|---|---|---|---|---|---|
| Alameda, Calif. | 1 | ..... | Louisville, Ky. | 1 | ..... |
| Albuquerque, N. Mex. | 1 | ..... | Madison, Wis. | 3 | ..... |
| Alton, Ill. | 1 | ..... | Marion, Ohio | 1 | ..... |
| Atlanta, Ga. | 1 | ..... | Marshalltown, Iowa | 9 | ..... |
| Bellingham, Wash. | 15 | ..... | Milwaukee, Wis. | 8 | ..... |
| Berkeley, Calif. | 1 | ..... | Minneapolis, Minn. | 15 | ..... |
| Birmingham, Ala. | 2 | ..... | Mishawaka, Ind. | 1 | ..... |
| Boise, Idaho | 7 | ..... | Monmouth, Ill. | 11 | ..... |
| Canton, Ohio | 2 | ..... | Muncie, Ind. | 1 | ..... |
| Cedar Rapids, Iowa | 1 | ..... | New Orleans, La. | ..... | 1 |
| Charleston, W. Va. | 1 | ..... | Oakland, Calif. | 5 | ..... |
| Cheyenne, Wyo. | 1 | ..... | Ogden, Utah | 33 | ..... |
| Chillicothe, Ohio | 3 | ..... | Oklahoma City, Okla. | 1 | ..... |
| Cincinnati, Ohio | 3 | ..... | Omaha, Nebr. | 3 | ..... |
| Columbus, Ohio | ..... | 1 | Oshkosh, Wis. | 2 | ..... |
| Council Bluffs, Iowa | 3 | ..... | Pasadena, Calif. | 1 | ..... |
| Dallas, Tex. | 5 | ..... | Piqua, Ohio | 2 | ..... |
| Davenport, Iowa | 40 | ..... | Pocatello, Idaho | 7 | ..... |
| Denver, Colo. | 18 | ..... | Portland, Oreg. | 81 | ..... |
| Des Moines, Iowa | 1 | ..... | Quincy, Ill. | 1 | ..... |
| Detroit, Mich. | 3 | ..... | Racine, Wis. | 2 | ..... |
| Dubuque, Iowa | 1 | ..... | Richmond, Ind. | 1 | ..... |
| Duluth, Minn. | 1 | ..... | Richmond, Va. | 1 | ..... |
| East Liverpool, Ohio | 1 | ..... | Roanoke, Va. | 3 | ..... |
| Eau Claire, Wis. | 1 | ..... | Rock Island, Ill. | 1 | ..... |
| El Paso, Tex. | 1 | ..... | St. Joseph, Mo. | 9 | ..... |
| Evansville, Ind. | 34 | ..... | St. Paul, Minn. | 3 | ..... |
| Everett, Wash. | 1 | ..... | Salt Lake City, Utah | 3 | ..... |
| Fond du Lac, Wis. | 13 | ..... | San Jose, Calif. | 1 | ..... |
| Green Bay, Wis. | 1 | ..... | Santa Ana, Calif. | 1 | ..... |
| Greenville, S. C. | 1 | ..... | Seattle, Wash. | 19 | ..... |
| Hot Springs, Ark. | 1 | ..... | South Bend, Ind. | 15 | ..... |
| Huntington, W. Va. | 8 | ..... | Spartanburg, S. C. | 4 | ..... |
| Indianapolis, Ind. | 4 | ..... | Spokane, Wash. | 25 | ..... |
| Ironwood, Mich. | 2 | ..... | Steubenville, Ohio | 4 | ..... |
| Kansas City, Mo. | 11 | ..... | Superior, Wis. | 2 | ..... |
| Kenosha, Wis. | 1 | ..... | Tacoma, Wash. | 2 | ..... |
| Kokomo, Ind. | 20 | ..... | Vancouver, Wash. | 1 | ..... |
| La Crosse, Wis. | 2 | ..... | Walla Walla, Wash. | 8 | ..... |
| La Fayette, Ind. | 7 | ..... | Wausau, Wis. | 6 | ..... |
| Lincoln, Nebr. | 4 | ..... | Wichita, Kans. | 2 | ..... |
| Logansport, Ind. | 3 | ..... | Woonsocket, R. I. | 2 | ..... |
| Los Angeles, Calif. | 3 | ..... | Youngstown, Ohio | 8 | ..... |

## TETANUS.

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Deaths. | Place. | Cases. | Deaths. |
|---|---|---|---|---|---|
| Hartford, Conn. | ..... | 1 | Minneapolis, Minn. | ..... | 1 |
| Long Branch, N. J. | ..... | 1 | New Orleans, La. | ..... | 1 |
| Los Angeles, Calif. | ..... | 1 | St. Paul, Minn. | ..... | 1 |

## TUBERCULOSIS.

See Telegraphic weekly reports from States, page 2916; and Weekly reports from cities, page 2936.

## TYPHOID FEVER.

### State Reports for October and November, 1919.

| Place. | New cases reported. |
|---|---|
| Arizona (November): | |
| Maricopa County— | |
| Buckeye | 1 |
| California (October): | |
| Alameda County— | |
| Alameda | 1 |
| Oakland | 7 |
| El Dorado County | 7 |
| Fresno County | 14 |
| Clovis | 1 |
| Fresno | 3 |
| Sanger | 1 |
| Imperial County— | |
| Brawley | 3 |
| Calexico | 1 |
| El Centro | 2 |
| Kings County— | |
| Hanford | 1 |
| Los Angeles County | 1 |
| Huntington Park | 1 |
| Long Beach | 2 |
| Los Angeles | 27 |
| Santa Monica | 4 |
| Whittier | 1 |
| Madera County— | |
| Madera | 2 |
| Monterey County | 3 |
| Orange County | 1 |
| Anaheim | 1 |
| Plumas County | 1 |
| Riverside County | 1 |
| Banning | 3 |
| Blythe | 3 |
| Riverside | 2 |
| Sacramento County | 4 |
| Sacramento | 8 |
| San Bernardino County— | |
| Ontario | 1 |
| Redlands | 1 |
| San Francisco | 9 |
| San Joaquin County | 2 |
| Lodi | 2 |
| Manteca | 1 |
| Stockton | 1 |
| San Mateo County— | |
| San Mateo | 1 |
| Santa Clara County | 2 |
| Gilroy | 3 |
| Sunnyvale | 1 |
| Santa Cruz County— | |
| Santa Cruz | 1 |
| Shasta County | 4 |
| Solano County | 1 |
| Rio Vista | 1 |
| Stanislaus County— | |
| Turlock | 1 |
| Tulare County | 1 |
| Total | 139 |
| Florida (November): | |
| Bradford County | 1 |
| Dade County— | |
| Miami | 2 |
| DeSoto County | 2 |
| Duval County— | |
| Jacksonville | 1 |
| Escambia County— | |
| Pensacola | 1 |
| Flagler County | 1 |
| Hillsborough County | 3 |
| Tampa | 9 |
| Lee County | 1 |
| Levy County | 1 |
| Manatee County | 1 |
| Orange County | 2 |

| Place. | New cases reported. |
|---|---|
| Florida (November)—Continued. | |
| Pasco County | 1 |
| Pinellas County | 3 |
| Polk County | 1 |
| Putnam County | 1 |
| St. Johns County | 1 |
| St. Lucie County | 3 |
| Taylor County | 1 |
| Volusia County | 3 |
| Walton County | 1 |
| Total | 40 |
| Massachusetts (November): | |
| Berkshire County— | |
| North Adams | 1 |
| Bristol County— | |
| Attleboro (town) | 2 |
| Fall River | 14 |
| New Bedford | 2 |
| Dukes County— | |
| Tisbury (town) | 1 |
| Essex County— | |
| Haverhill | 1 |
| Lawrence | 4 |
| Lynn | 3 |
| Saugus (town) | 1 |
| Franklin County— | |
| Greenfield (town) | 1 |
| Hampden County— | |
| Holyoke | 1 |
| Longmeadow (town) | 1 |
| Russell (town) | 1 |
| Springfield | 2 |
| Middlesex County— | |
| Belmont (town) | 1 |
| Cambridge | 3 |
| Everett | 1 |
| Malden | 3 |
| Medford | 2 |
| Newton | 1 |
| Reading (town) | 1 |
| Waltham | 1 |
| Woburn | 1 |
| Somerville | 2 |
| Framingham (town) | 2 |
| Norfolk County— | |
| Brookline (town) | 2 |
| Foxboro (town) | 1 |
| Franklin (town) | 1 |
| Stoughton (town) | 1 |
| Randolph (town) | 1 |
| Plymouth County— | |
| Abington (town) | 1 |
| Marshfield (town) | 3 |
| Suffolk County— | |
| Boston | 1 |
| Chelsea | 1 |
| Worcester County— | |
| Southbridge (town) | 1 |
| Webster (town) | 1 |
| Westboro (town) | 1 |
| Worcester | 10 |
| Total | 83 |
| Minnesota (October): | |
| Beltrami County— | |
| Moose Lake Township | 1 |
| Carlton County— | |
| Cloquet | 1 |
| Chippewa County— | |
| Montevideo | 1 |
| Clay County— | |
| Moorehead | 1 |
| Clearwater County— | |
| Winsor township | 1 |

## TYPHOID FEVER—Continued.

### State Reports for October and November, 1919—Continued.

| Place. | New cases reported. |
|---|---|
| **Minnesota (October)—Continued.** | |
| Cottonwood County— | |
| Storden | 1 |
| Goodhue County— | |
| Red Wing | 2 |
| Minneola township | 3 |
| Wanamingo township | 1 |
| Hennepin County— | |
| Minneapolis | 7 |
| Itasca County— | |
| Nashwauk | 2 |
| Kandiyohi County— | |
| Wilmar | 1 |
| Kittson County— | |
| Svea township | 1 |
| Lac qui Parle County— | |
| Dawson | 1 |
| Marshall County— | |
| Bigwoods township | 1 |
| Nicollet County— | |
| St. Peter | 5 |
| Otttertail County— | |
| Fergus Falls | 6 |
| Maplewood township | 1 |
| Pine County— | |
| Pine Lake township | 1 |
| Ramsey County— | |
| St. Paul | 9 |
| Red Lake County— | |
| Red Lake Falls | 1 |
| Redwood County— | |
| Redwood Falls | 1 |
| Redwood Falls township | 1 |
| Rice County— | |
| Cannon City township | 3 |
| Roseau County— | |
| Roosevelt | 1 |
| Palmville township | 1 |
| St. Louis County— | |
| Duluth | 8 |
| Eveleth | 2 |
| Hibbing | 1 |
| Mountain Iron | 2 |
| Virginia | 2 |
| Balkan township | 1 |
| Leiding township | 1 |
| Todd County— | |
| Staples | 1 |
| Winona County— | |
| Lewiston | 1 |
| Wright County— | |
| Cokato Township | 1 |
| Yellow Medicine County— | |
| Florida Township | 1 |
| Total | 76 |
| **Nebraska (November):** | |
| Douglas County | 2 |
| Lancaster County | 2 |
| Richardson County | 2 |
| Saline County | 1 |
| Thurston County | 11 |
| Total | 18 |
| **South Dakota (October):** | |
| Beadle County | 1 |
| Bon Homme County | 1 |
| Brule County | 1 |
| Davison County | 1 |
| Dewey County | 1 |
| Douglas County | 1 |
| Fall River County | 1 |
| Jerauld County | 2 |

| Place. | New cases reported. |
|---|---|
| **South Dakota (October)—Continued.** | |
| Jones County | 1 |
| Minnehaha County | 1 |
| Yankton County | 1 |
| Total | 12 |
| **Vermont (November)** | 10 |
| **Virginia (October):** | |
| Accomac County | 5 |
| Chincoteague | 1 |
| Horntown | 2 |
| Hopeton | 1 |
| Alexandria County— | |
| Alexandria | 10 |
| Alleghany County— | |
| Clifton Forge | 1 |
| Bath County | 3 |
| Botetourt County— | |
| Troutville | 1 |
| Buchanan County | 1 |
| Grundy | 1 |
| Buckingham County | 1 |
| Campbell County | 1 |
| Caroline County | 1 |
| Carroll County | 1 |
| Charles City County | 9 |
| Roxbury | 8 |
| Charlotte County | 2 |
| Clark County | 1 |
| Craig County | 1 |
| Culpeper County | 1 |
| Dinwiddie County— | |
| Petersburg | 1 |
| Elizabeth City County | 1 |
| Essex County | 2 |
| Fairfax County | 1 |
| Fauquier County | 3 |
| Fluvanna County | 1 |
| Spores | 1 |
| Frederick County | 3 |
| Gloucester County | 4 |
| Greensville County | 1 |
| Emporia | 3 |
| Halifax County— | |
| Houston | 2 |
| Hanover County | 2 |
| Henrico County— | |
| Richmond | 8 |
| Henry County | 1 |
| Ridgeway | 1 |
| Martinsville | 2 |
| Isle of Wight County | 1 |
| King and Queen County | 2 |
| Lancaster County | 1 |
| Lee County | 4 |
| Ewing | 3 |
| Loudoun County | 1 |
| Louisa County | 1 |
| Madison County | 1 |
| Middlesex County | 2 |
| Montgomery County | 3 |
| Alleghany Springs | 1 |
| Radford | 1 |
| Nansemond County | 3 |
| New Kent County— | |
| Tunstall | 1 |
| Norfolk County | 7 |
| Portsmouth | 4 |
| Norfolk | 13 |
| Northampton County | 1 |
| Northumberland County | 4 |
| Nottoway County— | |
| Blackstone | 1 |

## TYPHOID FEVER—Continued.

### State Reports for October and November, 1919—Continued.

| Place. | New cases reported. |
|---|---|
| Virginia (October)—Continued. | |
| Page County | 2 |
| Luray | 4 |
| Patrick County | 2 |
| Pittsylvania County— | |
| Chatham | 1 |
| Powhatan County | 1 |
| Pulaski County | 4 |
| Richmond County | 5 |
| Roanoke County— | |
| Roanoke | 3 |
| Salem | 1 |
| Rockbridge County | 5 |
| Rockingham County | 2 |
| Harrisonburg | 2 |
| Russell County | 2 |
| Lebanon | 1 |
| Wilder | 1 |
| Scott County | 1 |
| Shenandoah County | 1 |
| Smyth County— | |
| Marion | 1 |
| Southampton County | 9 |
| Surry County | 2 |
| Sussex County | 3 |
| Tazewell County | 2 |
| Warwick County | 6 |
| Washington County | 6 |
| Total | 211 |

### City Reports for Week Ended Nov. 29, 1919.

| Place. | Cases. | Deaths. |
|---|---|---|
| Akron, Ohio | 1 | |
| Ann Arbor, Mich | 2 | |
| Atchison, Kans | 1 | |
| Atlantic City, N. J | 1 | 1 |
| Attleboro, Mass | 1 | |
| Auburn, Me | 1 | |
| Baltimore, Md | | 4 |
| Beatrice, Nebr | 1 | |
| Bethlehem, Pa | 1 | |
| Binghamton, N. Y | 1 | |
| Birmingham, Ala | 1 | |
| Bloomington, Ind | 1 | |
| Braddock, Pa | 1 | |
| Buffalo, N. Y | 2 | 1 |
| Canton, Ohio | 1 | |
| Chambersburg, Pa | 1 | |
| Charleston, S. C | 1 | |
| Charleston, W. Va | 2 | |
| Charlotte, N. C | 2 | |
| Chelsea, Mass | | 1 |
| Chester, Pa | 1 | |
| Chicago, Ill | 7 | |
| Cleveland, Ohio | 1 | |
| Colorado Springs, Colo | 1 | |
| Columbus, Ohio | 5 | |
| Connellsville, Pa | 1 | |
| Cumberland, Md | 1 | |
| Cumberland, R. I | 1 | |
| Dallas, Tex | 2 | 1 |
| Decatur, Ill | 3 | |
| Detroit, Mich | 1 | |
| Duluth, Minn | 2 | |
| Durham, N. C | 2 | |
| Elkhart, Ind | 1 | |
| Fall River, Mass | 1 | |
| Fort Wayne, Ind | | 1 |
| Galesburg, Ill | 1 | 1 |
| Greenfield, Mass | 1 | |
| Greenville, S. C | 1 | |
| Hartford, Conn | 2 | |
| Huntington, Ind | | 1 |
| Huntington, W. Va | | 1 |
| Jamestown, N. Y | 1 | |
| Jersey City, N. J | 2 | |
| Kalamazoo, Mich | 3 | 1 |
| Kansas City, Mo | 2 | 1 |
| Lancaster, Ohio | 1 | |
| Lawrence, Kans | 2 | |
| Lexington, Ky | 1 | 1 |
| Lima, Ohio | 7 | |
| Los Angeles, Calif | 5 | 1 |
| Louisville, Ky | 3 | |
| McKees Rocks, Pa | 1 | |
| Macon, Ga | | 1 |
| Milwaukee, Wis | 1 | 1 |
| Minneapolis, Minn | 1 | |
| Mobile, Ala | 2 | |
| Moline, Ill | 1 | |
| Mt. Vernon, N. Y | 1 | |
| Nashville, Tenn | 2 | |
| Newark, N. J | 1 | |
| New Bedford, Mass | | 2 |
| New Orleans, La | 1 | 1 |
| New York, N. Y | 22 | 2 |
| Niagara Falls, N. Y | 1 | |
| Norfolk, Va | 1 | |
| North Little Rock, Ark | 3 | |
| Paducah, Ky | 1 | |
| Parsons, Kans | 1 | |
| Paterson, N. J | 1 | |
| Philadelphia, Pa | 7 | |
| Pittsburgh, Pa | 1 | |
| Pontiac, Mich | 1 | 2 |
| Portland, Me | 1 | |
| Portland, Oreg | | 1 |
| Portsmouth, N. H | 1 | |
| Providence, R. I | 1 | |
| Richmond, Va | 1 | |
| Rochester, N. Y | 1 | |
| Rockford, Ill | 1 | |
| Sacramento, Calif | 1 | |
| St. Louis, Mo | 2 | |
| Salt Lake City, Utah | 2 | |
| San Antonio, Tex | 5 | |
| San Francisco, Calif | | 2 |
| Springfield, Mass | 2 | 1 |
| Stockton, Calif | 1 | |
| Syracuse, N. Y | 1 | 1 |
| Toledo, Ohio | 1 | |
| Troy, N. Y | 1 | |
| Washington, D. C | 8 | |
| Wausau, Wis | 1 | |
| Wilmington, Del | 3 | 2 |
| Winchester, Mass | | 1 |
| Winston-Salem, N. C | 1 | |
| Worcester, Mass | | 1 |
| Youngstown, Ohio | | 1 |

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS.

### City Reports for Week Ended Nov. 29, 1919.

| City. | Population as of July 1, 1917 (estimated by U. S. Census Bureau). | Total deaths from all causes. | Diphtheria. | | Measles. | | Scarlet fever. | | Tuberculosis. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Aberdeen, Wash | 21,392 | ..... | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Adams, Mass | 14,406 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Akron, Ohio | 93,604 | 13 | 10 | ..... | 5 | ..... | 17 | ..... | ..... | ..... |
| Alameda, Calif | 28,433 | 6 | 7 | ..... | 8 | ..... | ..... | ..... | ..... | ..... |
| Albuquerque, N. Mex | 14,509 | 10 | ..... | ..... | ..... | ..... | ..... | ..... | 4 | 3 |
| Alexandria, La | 16,232 | ..... | 1 | ..... | ..... | ..... | ..... | ..... | 2 | ..... |
| Alexandria, Va | 17,939 | 5 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Allentown, Pa | 65,109 | ..... | 8 | ..... | 2 | ..... | 6 | ..... | 3 | ..... |
| Alliance, Ohio | 19,581 | ..... | ..... | ..... | ..... | ..... | 2 | ..... | ..... | 1 |
| Alpena, Mich | 13,365 | ..... | 2 | ..... | 2 | ..... | 1 | ..... | ..... | ..... |
| Alton, Ill | 23,783 | 5 | 2 | ..... | ..... | ..... | 6 | ..... | 1 | 1 |
| Amesbury, Mass | 10,200 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Anaconda, Mont | 10,631 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Anderson, Ind | 24,230 | 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Ann Arbor, Mich | 15,041 | 9 | 1 | ..... | ..... | ..... | 4 | ..... | ..... | ..... |
| Anniston, Ala | 14,326 | ..... | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Ansonia, Conn | 16,954 | 4 | ..... | ..... | ..... | ..... | 1 | ..... | 1 | 1 |
| Appleton, Wis | 18,005 | 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Arlington, Mass | 13,073 | 11 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Asbury Park, N. J | 14,629 | 3 | ..... | ..... | ..... | ..... | 3 | ..... | ..... | ..... |
| Ashland, Ky | 12,195 | ..... | 2 | ..... | ..... | ..... | 2 | ..... | ..... | ..... |
| Ashtabula, Ohio | 22,008 | 4 | ..... | ..... | 5 | ..... | ..... | ..... | ..... | 1 |
| Astoria, Oreg | 10,487 | 16 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 |
| Atlanta, Ga | 196,144 | 55 | 8 | ..... | 8 | ..... | 1 | ..... | 2 | 5 |
| Atlantic City, N. J | 59,515 | 10 | 2 | 1 | 14 | ..... | 1 | ..... | 1 | 1 |
| Attleboro, Mass | 19,776 | 5 | 11 | ..... | ..... | ..... | 3 | ..... | ..... | ..... |
| Aurora, Ill | 34,795 | 1 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | 1 |
| Austin, Tex | 35,612 | 12 | 10 | 1 | ..... | ..... | ..... | ..... | 1 | 1 |
| Bakersfield, Calif | 17,543 | 7 | ..... | ..... | ..... | ..... | ..... | ..... | 2 | ..... |
| Baltimore, Md | 594,637 | 195 | 46 | 5 | 12 | ..... | 32 | ..... | 17 | 20 |
| Bangor, Me | 26,958 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Barberton, Ohio | 14,187 | 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Battle Creek, Mich | 30,150 | ..... | 11 | 2 | ..... | ..... | 17 | ..... | ..... | ..... |
| Bayonne, N. J | 72,204 | ..... | 13 | ..... | ..... | ..... | 4 | ..... | ..... | ..... |
| Beatrice, Nebr | 10,437 | 2 | ..... | ..... | ..... | ..... | 2 | ..... | ..... | ..... |
| Beaumont, Tex | 28,851 | 8 | 1 | ..... | ..... | ..... | 2 | ..... | 1 | 2 |
| Bedford, Ind | 10,613 | 3 | 1 | ..... | 1 | ..... | 1 | ..... | ..... | ..... |
| Belleville, N. J | 12,797 | ..... | ..... | ..... | ..... | ..... | 3 | ..... | ..... | ..... |
| Bellingham, Wash | 34,362 | ..... | ..... | ..... | ..... | ..... | 4 | ..... | ..... | ..... |
| Beloit, Wis | 18,547 | ..... | 3 | ..... | ..... | ..... | ..... | ..... | 3 | 1 |
| Berkeley, Calif | 60,427 | 11 | 1 | ..... | 1 | ..... | 1 | ..... | 2 | ..... |
| Berlin, N. H | 13,892 | 2 | 1 | ..... | ..... | ..... | 2 | ..... | ..... | 1 |
| Bethlehem, Pa | 14,353 | ..... | 3 | ..... | 7 | ..... | ..... | ..... | ..... | ..... |
| Beverly, Mass | 22,128 | 2 | 1 | ..... | ..... | ..... | 2 | ..... | 1 | ..... |
| Billings, Mont | 15,123 | 4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Binghamton, N. Y | 54,864 | 18 | ..... | ..... | ..... | ..... | 5 | ..... | 3 | 1 |
| Birmingham, Ala | 189,716 | 42 | 8 | 1 | ..... | ..... | 4 | ..... | 8 | 7 |
| Bloomfield, N. J | 19,013 | 5 | 2 | ..... | ..... | ..... | 4 | ..... | ..... | ..... |
| Bloomington, Ill | 27,462 | 6 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | 1 |
| Bloomington, Ind | 11,661 | 2 | 1 | ..... | 1 | ..... | 1 | ..... | ..... | ..... |
| Bluefields, W. Va | 16,123 | ..... | 2 | ..... | ..... | ..... | 2 | ..... | ..... | ..... |
| Boise, Idaho | 35,951 | 10 | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Boston, Mass | 767,813 | 208 | 59 | 1 | 145 | 3 | 65 | ..... | 44 | 23 |
| Braddock, Pa | 22,060 | ..... | 2 | ..... | 20 | ..... | ..... | ..... | ..... | ..... |
| Brazil, Ind | 10,472 | 3 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Bridgeport, Conn | 124,724 | 41 | 12 | 3 | 22 | ..... | 3 | ..... | 1 | 1 |
| Bristol, Conn | 16,318 | 2 | 3 | ..... | ..... | ..... | ..... | ..... | 1 | 1 |
| Brockton, Mass | 69,152 | 17 | 11 | ..... | 43 | ..... | 1 | ..... | 1 | 1 |
| Brookline, Mass | 33,526 | 5 | 3 | ..... | 2 | ..... | 1 | ..... | ..... | 1 |
| Brunswick, Ga | 10,984 | 5 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Buffalo, N. Y | 475,781 | 120 | 126 | 12 | 3 | ..... | ..... | ..... | 16 | 7 |
| Burlington, Iowa | 25,144 | ..... | 1 | ..... | ..... | ..... | 1 | ..... | 7 | ..... |
| Burlington, Vt | 21,802 | 5 | 2 | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Butler, Pa | 28,677 | ..... | 3 | ..... | ..... | ..... | 17 | ..... | ..... | ..... |
| Butte, Mont | 44,057 | 18 | 1 | ..... | 1 | ..... | 2 | ..... | ..... | 3 |
| Cairo, Ill | 15,995 | 8 | 5 | 1 | 1 | ..... | ..... | ..... | ..... | 1 |
| Cambridge, Mass | 114,293 | 31 | 8 | 2 | 10 | ..... | 8 | ..... | 4 | 4 |
| Camden, N. J | 108,117 | ..... | 4 | ..... | 2 | ..... | 7 | ..... | 1 | ..... |
| Canton, Ill | 13,674 | 3 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Canton, Ohio | 62,566 | 16 | 8 | ..... | 2 | ..... | 2 | ..... | 1 | 1 |
| Carbondale, Pa | 19,597 | ..... | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Carlisle, Pa | 10,795 | ..... | 2 | ..... | ..... | ..... | 3 | ..... | ..... | ..... |
| Carnegie, Pa | 11,963 | ..... | 3 | ..... | 2 | ..... | 4 | ..... | ..... | ..... |

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

### City Reports for Week Ended Nov. 29, 1919—Continued.

| City. | Population as of July 1, 1917 (estimated by U. S. Census Bureau). | Total deaths from all causes. | Diphtheria. | | Measles. | | Scarlet fever. | | Tuberculosis. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Centralia, Ill | 11,838 | 4 | | | | | | | | |
| Chanute, Kans | 12,968 | 4 | | | | | 2 | | | |
| Charleston, S. C | 61,041 | 27 | 2 | | 4 | | 2 | | 1 | 3 |
| Charleston, W. Va | 31,060 | 8 | 5 | | | | 3 | | | |
| Charlotte, N. C | 40,759 | 11 | 6 | | | | | | 2 | |
| Chattanooga, Tenn | 61,575 | 16 | 1 | | | | 8 | | | 2 |
| Chelsea, Mass | 48,405 | 14 | 3 | | | | 1 | | | |
| Chester, Pa | 41,857 | | 4 | | | | 1 | | 1 | |
| Cheyenne, Wyo | [1] 11,320 | 1 | 2 | | | | 6 | | | |
| Chicago Heights, Ill | 22,863 | 3 | 3 | | 1 | | 1 | | | |
| Chicago, Ill | 2,547,201 | 579 | 207 | 13 | 147 | 1 | 232 | 3 | 267 | 50 |
| Chicopee, Mass | 29,950 | 3 | | | 6 | | 3 | | 2 | |
| Chillicothe, Ohio | 15,625 | 5 | 3 | | | | 1 | | | |
| Cincinnati, Ohio | 414,248 | 129 | 32 | 2 | 26 | | 43 | 1 | 19 | 6 |
| Cleveland, Ohio | 692,259 | 145 | 86 | 9 | 61 | | 20 | 1 | 13 | 6 |
| Clinton, Mass | [1] 13,075 | 2 | 1 | | | | | | 1 | |
| Coatesville, Pa | 14,998 | | 4 | | 2 | | 2 | | | |
| Coffeyville, Kans | 18,331 | 6 | 4 | 1 | | | | | | |
| Cohoes, N. Y | 25,292 | 2 | | | | | | | | |
| Colorado Springs, Colo | 38,965 | 7 | | | | | | | 17 | 4 |
| Columbia, Pa | [1] 11,454 | | 2 | | | | | | | |
| Columbia, S. C | 35,165 | | 1 | | | | | | | |
| Columbus, Ga | 26,306 | 22 | | | | | | | 2 | 2 |
| Columbus, Ohio | 220,135 | 78 | 7 | | 1 | | 13 | 1 | 4 | 5 |
| Concord, N. H | 22,858 | 7 | | | | | | | 1 | 1 |
| Connellsville, Pa | 15,876 | | | | | | 3 | | | |
| Cortland, N. Y | 13,321 | 2 | | | | | 4 | | 9 | |
| Council Bluffs, Iowa | 31,838 | 11 | 8 | | 4 | | 5 | | | 1 |
| Covington, Ky | 59,623 | 15 | 15 | 1 | 1 | | 3 | | 2 | |
| Cranston, R. I | 26,773 | 6 | | | 1 | | | | 1 | 1 |
| Cumberland, Md | 26,686 | 5 | 2 | | | | 4 | | 1 | |
| Cumberland, R. I | 10,968 | | 1 | | | | | | | |
| Dallas, Tex | 129,738 | 47 | 38 | 6 | 1 | 1 | 5 | | 2 | 1 |
| Danville, Ill | 32,969 | 8 | | | | | | | | |
| Danville, Va | 20,183 | | 2 | | | | | | | |
| Davenport, Iowa | 49,618 | | 3 | | | | | | | |
| Dayton, Ohio | 128,939 | 33 | 8 | | | | 3 | | 2 | |
| Decatur, Ill | 41,483 | 10 | 2 | | 7 | | | | | 1 |
| Dedham, Mass | 10,618 | | | | 20 | | 3 | | | |
| Denver, Colo | 268,439 | 60 | 7 | | 1 | | 11 | | | 5 |
| Des Moines, Iowa | 104,052 | | 2 | | | | 11 | | | |
| Detroit, Mich | 619,648 | 191 | 100 | 8 | 75 | 2 | 80 | 1 | 46 | 11 |
| Dover, N. H | 13,276 | 3 | | | | | 1 | | 1 | |
| Du Bois, Pa | 14,994 | | 4 | | 1 | | 8 | | | |
| Dubuque, Iowa | 40,096 | 7 | 1 | | | | | | | 1 |
| Duluth, Minn | 97,077 | 20 | 2 | | 2 | | 1 | | 2 | 2 |
| Dunkirk, N. Y | 21,311 | 8 | 2 | 1 | | | 3 | 1 | 1 | |
| Dunmore, Pa | 21,286 | | | | | | 4 | | | |
| Durham, N. C | 26,160 | 6 | 4 | | | | 2 | | | 1 |
| East Chicago, Ind | 50,286 | 3 | | | | | | | | |
| East Cleveland, Ohio | 13,864 | | 2 | | | | | | | |
| Easthampton, Mass | 10,656 | | | | | | 6 | | | |
| East Liverpool, Ohio | 22,941 | 5 | 2 | | | | 3 | | | |
| Easton, Pa | 30,854 | | 3 | | | | | | 1 | |
| East Orange, N. J | 43,761 | 13 | 5 | | 3 | | 3 | | | |
| East Providence, R. I | 18,485 | | 1 | | | | 1 | | | |
| East St. Louis, Ill | 77,312 | 21 | 2 | 1 | 2 | | | | 3 | 2 |
| Eau Claire, Wis | 18,887 | | | | | | 1 | | | |
| Elgin, Ill | 28,562 | 8 | | | | | 1 | | 1 | |
| Elizabeth, N. J | 88,830 | | 3 | | 6 | | 7 | | 2 | 2 |
| Elkhart, Ind | 22,273 | 8 | 1 | | | | 10 | | | |
| Elmira, N. Y | 38,272 | 15 | 3 | | 57 | | 1 | | 2 | |
| El Paso, Tex | 69,149 | 34 | 4 | | 1 | | 2 | | 11 | 11 |
| Elwood, Ind | 11,028 | 4 | | | | | | | | |
| Elyria, Ohio | 19,503 | 8 | | | 25 | | | | | |
| Englewood, N. J | 12,603 | 4 | | | | | | | | 1 |
| Erie, Pa | 76,592 | | 16 | | 4 | | 7 | | 4 | |
| Eureka, Calif | 15,142 | 2 | | | | | | | | |
| Evanston, Ill | 29,204 | 10 | | | | | 2 | | | |
| Evansville, Ind | 76,981 | 16 | 11 | | | | | | | 2 |
| Everett, Mass | 40,160 | | 8 | 1 | | | | | 4 | |
| Everett, Wash | 37,205 | | | | 1 | | | | | |

[1] Population Apr. 15, 1910.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

### City Reports for Week Ended Nov. 29, 1919—Continued.

| City. | Population as of July 1, 1917 (estimated by U. S. Census Bureau). | Total deaths from all causes. | Diphtheria. | | Measles. | | Scarlet fever. | | Tuberculosis. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Fairmont, W. Va. | 16,111 | | | | 4 | | 2 | | | |
| Fall River, Mass. | 129,828 | 34 | 8 | 1 | 21 | | 2 | | 2 | 5 |
| Fargo, N. Dak. | 17,872 | 12 | 3 | | 2 | | 4 | | 1 | 1 |
| [1] Findlay, Ohio. | 14,858 | 3 | | | | | | | | |
| Fond du Lac, Wis. | 21,486 | 7 | | | | | 1 | | | 2 |
| Fort Dodge, Iowa. | 21,039 | | 2 | | | | | | 2 | |
| Fort Scott, Kans. | 10,564 | 4 | | | | | | | | |
| Fort Smith, Ark. | 29,390 | | 5 | | | | 5 | | | |
| Fort Wayne, Ind. | 78,014 | 18 | 7 | 1 | | | | | | 1 |
| Fort Worth, Tex. | 109,597 | 25 | 15 | 1 | | | 2 | | | |
| Fostoria, Ohio. | 10,959 | 2 | | | | | 2 | | 1 | |
| Framingham, Mass. | 14,149 | 6 | | | | | 3 | | | |
| Freeport, Ill. | 19,844 | 7 | 2 | 1 | | | | | | 1 |
| Fremont, Nebr. | 10,080 | 3 | | | | | | | | |
| Fremont, Ohio. | 11,034 | 2 | | | 1 | | | | | |
| Fresno, Calif. | 36,314 | 5 | 1 | | | | 4 | | | 3 |
| Galesburg, Ill. | 24,629 | 8 | | | | | | | | |
| Galveston, Tex. | 42,650 | 14 | 2 | | | | | | | 1 |
| Gary, Ind. | 56,000 | 13 | 5 | | | | 3 | | 1 | |
| Glens Falls, N. Y. | 17,160 | 4 | | | | | | | | |
| Gloucester City, N. J. | 11,375 | | | | | | | | 1 | |
| Grand Rapids, Mich. | 132,861 | 31 | 4 | 1 | 1 | | 2 | | 1 | |
| Granite City, Ill. | 15,890 | 4 | 7 | | | | 3 | | | |
| [1] Great Falls, Mont. | 13,948 | 3 | | | | | 2 | | | |
| Greely, Colo. | 11,942 | 1 | | | | | | | | |
| Green Bay, Wis. | 30,017 | 6 | | | 1 | | | | | |
| Greenfield, Mass. | 12,251 | 5 | 5 | | | | | | 1 | |
| Greensboro, N. C. | 20,171 | 4 | | | | | | | | |
| Greenville, S. C. | 18,574 | 7 | | | | | 4 | | | |
| Greenwich, Conn. | 19,594 | 6 | | | | | 3 | | | |
| Hackensack, N. J. | 17,412 | 4 | | | 1 | | 6 | | | |
| Hammond, Ind. | 27,016 | 8 | 1 | | | | 6 | | | |
| Harrisburg, Pa. | 73,276 | | 7 | | 1 | | 3 | | | |
| Harrison, N. J. | 17,345 | | 1 | | | | 2 | | | |
| Hartford, Conn. | 112,831 | 32 | 12 | | 1 | | 18 | 1 | 4 | |
| Haverhill, Mass. | 49,180 | | | | | | | | 1 | 1 |
| Hazelton, Pa. | 28,981 | | 5 | | 29 | | 3 | | | |
| Hibbing, Minn. | 17,550 | | | | 12 | | | | | |
| Highland Park, Mich. | 33,859 | 4 | 11 | | | | 8 | | 1 | |
| Hoboken, N. J. | 78,324 | 12 | 4 | | | | 2 | | 2 | 2 |
| Holland, Mich. | 12,459 | 1 | 1 | | | | | | | |
| Holyoke, Mass. | 66,504 | 17 | | | 2 | | 3 | | 1 | |
| Homestead, Pa. | 23,071 | | 1 | | | | | | | |
| Hot Springs, Ark. | 17,690 | 7 | | | | | | | | |
| Hudson, N. Y. | 12,898 | 2 | | | | | | | | |
| Huntington, Ind. | 10,982 | 3 | | | | | 3 | | | |
| Huntington, W. Va. | 47,685 | 23 | 4 | 1 | | | 3 | | | |
| Hutchinson, Kans. | 21,461 | | | | | | 5 | | | |
| Independence, Mo. | 11,964 | 9 | | | | | 2 | | 1 | 1 |
| Indianapolis, Ind. | 283,622 | 86 | 8 | 1 | 1 | | 13 | | 4 | 7 |
| Iowa City, Iowa. | 11,626 | | 2 | 1 | | | | | | |
| Ironwood, Mich. | 15,095 | 5 | | | | | 3 | | | 2 |
| Irvington, N. J. | 16,710 | | | | | | | | 4 | |
| [1] Ishpeming, Mich. | 12,448 | 2 | | | 1 | | 1 | | | |
| Ithaca, N. Y. | 16,017 | 2 | | | | | 2 | | | |
| Jamestown, N. Y. | 37,431 | 9 | 6 | | | | | | 3 | 1 |
| Janesville, Wis. | 14,411 | 5 | | | | | 1 | | | 1 |
| Jersey City, N. J. | 312,557 | | 13 | | 6 | | 6 | | 7 | |
| Johnstown, N. Y. | 10,678 | 5 | | | | | | | | 1 |
| Johnstown, Pa. | 70,473 | | 2 | | 154 | | 1 | | | |
| Joplin, Mo. | 33,400 | 5 | 1 | | | | 1 | | 3 | |
| Kalamazoo, Mich. | 50,408 | 10 | 3 | | | | 11 | | | |
| Kankakee, Ill. | 14,270 | 2 | | | | | | | | |
| Kansas City, Kans. | 102,096 | | 11 | | 2 | | 3 | | 3 | |
| Kansas City, Mo. | 305,816 | 80 | 20 | 1 | 60 | | 7 | 1 | 7 | 6 |
| Kearny, N. J. | 24,325 | 2 | 2 | | 2 | | 4 | | 2 | |
| Keene, N. H. | 10,725 | 2 | | | | | | | | |
| Kenosha, Wis. | 32,833 | 9 | | | | | 4 | | 1 | |
| Kewanee, Ill. | 13,607 | 3 | | | | | | | | |
| Knoxville, Tenn. | 59,112 | | | | 2 | | 8 | | 1 | 1 |
| Kokomo, Ind. | 21,929 | 6 | | | | | | | | |

[1] Population Apr. 15, 1910.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

### City Reports for Week Ended Nov. 29, 1919—Continued.

| City. | Population as of July 1, 1917 (estimated by U. S. Census Bureau). | Total deaths from all causes. | Diphtheria. | | Measles. | | Scarlet fever. | | Tuberculosis. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Lackawanna, N. Y. | 16,219 | 0 | | | | | | | 3 | |
| La Crosse, Wis. | 31,833 | 8 | 3 | 1 | | | 1 | | | 1 |
| La Fayette, Ind. | 21,481 | 8 | | 1 | 1 | | 8 | | | |
| Lakewood, Ohio. | 23,813 | 7 | 1 | | 8 | | 1 | | | |
| Lancaster, Ohio. | 16,086 | 7 | 2 | | | | 4 | | | 1 |
| Lancaster, Pa. | 51,437 | 8 | | | 1 | | 3 | | | |
| La Salle, Ill. | 12,332 | 1 | | | | | | | | |
| Lawrence, Kans. | 13,477 | 3 | | | | | | | 1 | 1 |
| Lawrence, Mass. | 102,923 | 21 | 1 | | 3 | | 8 | | 2 | 1 |
| Leavenworth, Kans. | [1] 19,363 | 8 | 1 | | | | 2 | | | |
| Leominster, Mass. | 21,365 | 5 | 1 | 1 | | | 1 | | | |
| Lexington, Ky. | 41,997 | 13 | 3 | | 2 | | 6 | | | 2 |
| Lima, Ohio. | 37,145 | 13 | 3 | | | | 6 | | | 1 |
| Lincoln, Nebr. | 46,957 | 15 | | | | | 3 | | | |
| Lincoln, R. I. | 10,473 | | 1 | | | | | | | |
| Lockport, N. Y. | 20,028 | 2 | | | | | 1 | | | |
| Logansport, Ind. | 21,338 | 12 | | | | | 10 | | 2 | 2 |
| Long Beach, Calif. | 29,163 | 15 | | | | | 1 | | 1 | |
| Long Branch, N. J. | 15,733 | 8 | 1 | | | | 2 | | | 1 |
| Lorain, Ohio. | 38,266 | | 2 | | | | 1 | | | |
| Los Angeles, Calif. | 535,485 | 138 | 13 | | 9 | | 10 | | 42 | 12 |
| Louisville, Ky. | 240,808 | 53 | 37 | | | | 3 | | 2 | 8 |
| Lowell, Mass. | 114,366 | 23 | 6 | 1 | | | 19 | | 3 | |
| Lynchburg, Va. | 33,497 | 11 | 2 | | | | | | 1 | 2 |
| Lynn, Mass. | 101,534 | 21 | 8 | 1 | | | 23 | | 3 | 3 |
| McKeesport, Pa. | 48,299 | | 2 | | 1 | | 2 | | 2 | |
| McKees Rocks, Pa. | 20,795 | | 2 | | | | 3 | | | |
| Macon, Ga. | 46,099 | 28 | 4 | | | | 1 | | | 2 |
| Madison, Wis. | 31,315 | 9 | 1 | | | | 2 | | | |
| Mahanoy City, Pa. | 17,709 | | 2 | | | | 1 | | | |
| Malden, Mass. | 52,243 | 11 | 1 | | 1 | | 4 | | | 1 |
| Manchester, Conn. | 15,859 | 2 | | | | | 1 | | 2 | |
| Manchester, N. H. | 79,607 | 12 | 3 | | | | | | 5 | |
| Manitowoc, Wis. | 13,931 | 4 | | | 20 | | 5 | | | |
| Mankato, Minn. | [1] 10,365 | 5 | | | 1 | | 1 | | | 1 |
| Marinette, Wis. | [1] 14,610 | 0 | | | | | 2 | | | |
| Marion, Ind. | 19,923 | 9 | 1 | | | | 3 | | | |
| Marion, Ohio. | 24,129 | | | | | | 2 | | | |
| Marlboro, Mass. | 15,285 | 4 | | | | | | | | |
| Marquette, Mich. | 12,555 | 3 | | | | | 2 | | 2 | |
| Marshalltown, Iowa. | 14,519 | | 1 | | | | 1 | | | |
| Martinsburg, W. Va. | 12,984 | | 9 | | | | | | | |
| Martins Ferry, Ohio. | 10,135 | 0 | | | | | 1 | | | |
| Mason City, Iowa. | 14,938 | 6 | 5 | 1 | 11 | | | | | |
| Mattoon, Ill. | 12,764 | | | | 2 | | 1 | | | |
| Medford, Mass. | 26,681 | 4 | 1 | | | | 2 | | | |
| Melrose, Mass. | 17,724 | 3 | | | | | 1 | | | |
| Meriden, Conn. | 29,431 | | 1 | | | | 4 | | | 2 |
| Methuen, Mass. | 14,320 | 3 | 1 | | 1 | | 2 | | 1 | |
| Middletown, N. Y. | 15,890 | | 2 | | 1 | | 5 | | | |
| Middletown, Ohio. | 16,384 | 3 | 1 | | | | 1 | | | |
| Milford, Mass. | 14,280 | 1 | | | | | | | | |
| Milwaukee, Wis. | 445,008 | 85 | 44 | 2 | 27 | | 30 | 1 | 22 | 8 |
| Minneapolis, Minn. | 373,448 | 60 | 31 | | | | 14 | | 13 | 7 |
| Mishawaka, Ind. | 17,083 | 0 | 1 | | | | | | | |
| Missoula, Mont. | 19,075 | 2 | 1 | | | | 1 | | 1 | |
| Mobile, Ala. | 59,201 | 16 | 7 | | | | 2 | | | 1 |
| Moline, Ill. | 27,976 | 8 | 1 | | 2 | | 1 | | | 1 |
| Monessen, Pa. | 23,070 | 6 | 6 | | 11 | | 7 | | | |
| Monmouth, Ill. | 10,346 | 2 | | | | | 1 | | | |
| Montclair, N. J. | 27,087 | 11 | | | | | | 1 | 2 | |
| Montgomery, Ala. | 44,039 | 14 | 1 | | | | 2 | | | |
| Morgantown, W. Va. | 14,444 | 4 | | | 1 | | 1 | | | |
| Morristown, N. J. | 13,410 | 3 | | | | | | | | |
| Moundsville, W. Va. | 11,513 | 0 | | | 1 | | | | | |
| Mount Carmel, Pa. | 20,709 | | 6 | | 1 | | 2 | | 2 | |
| Mount Vernon, N. Y. | 37,991 | 7 | 2 | | 9 | | | | | |
| Muncie, Ind. | 25,653 | 7 | 4 | | | | 2 | | 1 | 1 |
| Muscatine, Iowa. | 17,713 | 5 | | | | | | | | |
| Nanticoke, Pa. | 23,811 | | 4 | | | | | | 1 | |
| Nashua, N. H. | 27,541 | 6 | 2 | | | | 4 | | | |

[1] Population Apr. 15, 1910.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

### City Reports for Week Ended Nov. 29, 1919—Continued.

| City. | Population as of July 1, 1917 (estimated by U. S. Census Bureau). | Total deaths from all causes. | Diphtheria. | | Measles. | | Scarlet fever. | | Tuberculosis. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Nashville, Tenn. | 118,136 | 42 | 14 | 1 | ..... | ..... | 6 | ..... | 4 | 2 |
| Newark, N. J. | 418,789 | 93 | 41 | 1 | 23 | ..... | 17 | ..... | 33 | 14 |
| New Bedford, Mass. | 121,622 | 33 | 2 | 1 | 52 | ..... | 4 | ..... | 6 | 2 |
| New Britain, Conn. | 55,385 | 16 | 5 | ..... | 1 | ..... | 8 | ..... | 3 | 3 |
| New Brunswick, N. J. | 25,855 | ..... | 1 | ..... | ..... | ..... | 1 | ..... | 2 | ..... |
| Newburgh, N. Y. | 29,893 | 6 | 4 | 2 | 1 | ..... | ..... | ..... | 1 | ..... |
| Newburyport, Mass. | 15,291 | 4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| New Castle, Ind. | 14,144 | ..... | ..... | ..... | 9 | ..... | ..... | ..... | ..... | ..... |
| New Castle, Pa. | 41,915 | ..... | 3 | ..... | ..... | ..... | 16 | ..... | 1 | ..... |
| New Haven, Conn. | 152,275 | 25 | 17 | ..... | 40 | ..... | 6 | ..... | 7 | ..... |
| New London, Conn. | 21,199 | 7 | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| New Orleans, La. | 377,010 | 117 | 3 | ..... | ..... | ..... | 8 | ..... | 12 | 11 |
| Newton, Mass. | 44,345 | 15 | 5 | ..... | ..... | ..... | 5 | ..... | ..... | ..... |
| New York, N. Y. | 5,737,492 | 1,280 | 280 | 17 | 351 | 9 | 98 | 3 | 168 | 111 |
| Niagara Falls, N. Y. | 38,466 | 11 | 3 | 1 | 44 | 3 | ..... | ..... | ..... | 2 |
| Norfolk, Va. | 91,148 | 25 | 6 | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Norristown, Pa. | 31,969 | ..... | ..... | ..... | ..... | ..... | 3 | ..... | ..... | ..... |
| North Adams, Mass. | [1] 22,019 | 6 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Northampton, Mass. | 20,006 | 2 | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| North Attleboro, Mass. | 11,248 | 4 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| North Braddock, Pa. | 15,684 | ..... | 1 | ..... | 6 | ..... | 2 | ..... | ..... | ..... |
| North Little Rock, Ark. | 15,515 | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| North Tonowanda, N. Y. | 14,060 | 4 | ..... | ..... | ..... | ..... | 4 | ..... | ..... | ..... |
| Norwalk, Conn. | 27,332 | 8 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Norwich, Conn. | 21,923 | 5 | 2 | 1 | 1 | ..... | ..... | ..... | 2 | 1 |
| Norwood, Ohio | 23,269 | 7 | 1 | ..... | 11 | ..... | ..... | ..... | ..... | 1 |
| Oakland, Calif. | 206,405 | 42 | 1 | 1 | 28 | ..... | 7 | ..... | 3 | 7 |
| Oak Park, Ill. | 27,816 | 15 | 9 | ..... | 1 | ..... | 1 | ..... | 1 | 1 |
| Ogdensburg, N. Y. | 16,845 | 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Ogden, Utah. | 32,343 | 11 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oil City, Pa. | 20,162 | ..... | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Oklahoma City, Okla. | 97,588 | 18 | 8 | ..... | ..... | ..... | 2 | ..... | 2 | 1 |
| Old Forge, Pa. | 15,479 | ..... | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Olean, N. Y. | 16,927 | 8 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Omaha, Nebr. | 177,777 | 33 | 2 | ..... | 1 | ..... | 16 | ..... | ..... | 6 |
| Orange, N. J. | 33,636 | 14 | 1 | ..... | ..... | ..... | ..... | ..... | 1 | 1 |
| Oshkosh, Wis. | 36,549 | 14 | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Paducah, Ky. | 25,178 | ..... | 1 | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Parkersburg, W. Va. | 21,059 | 4 | 3 | ..... | ..... | ..... | ..... | ..... | 1 | 1 |
| Parsons, Kans. | 15,952 | ..... | ..... | ..... | ..... | ..... | 2 | ..... | ..... | ..... |
| Pasadena, Calif. | 49,620 | 12 | ..... | ..... | ..... | ..... | 1 | ..... | 3 | 1 |
| Passaic, N. J. | 74,478 | 13 | 5 | ..... | ..... | ..... | 3 | ..... | 1 | 2 |
| Paterson, N. J. | 140,512 | 2 | 8 | ..... | ..... | ..... | 7 | ..... | 10 | ..... |
| Pawtucket, R. I. | 60,666 | 10 | ..... | 1 | ..... | ..... | ..... | ..... | ..... | ..... |
| Peekskill, N. Y. | 19,034 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Pekin, Ill. | 10,973 | ..... | ..... | ..... | ..... | ..... | 2 | ..... | ..... | ..... |
| Peoria, Ill. | 72,184 | 20 | 12 | ..... | ..... | ..... | 8 | ..... | 4 | 1 |
| Perth Amboy, N. J. | 42,646 | 10 | 9 | ..... | ..... | ..... | ..... | ..... | 2 | ..... |
| Petersburg, Va. | 25,817 | 10 | 3 | ..... | ..... | ..... | ..... | ..... | 1 | 1 |
| Philadelphia, Pa. | 1,735,514 | 419 | 124 | 12 | 126 | 1 | 51 | 3 | 63 | 36 |
| Phillipsburg, N. J. | 15,879 | 3 | 1 | ..... | ..... | ..... | ..... | ..... | 1 | 1 |
| Piqua, Ohio | 14,275 | 6 | 2 | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Pittsburgh, Pa. | 586,196 | ..... | 55 | ..... | 6 | ..... | 26 | ..... | 19 | ..... |
| Pittsfield, Mass. | 39,678 | 4 | ..... | ..... | ..... | ..... | ..... | ..... | 1 | 1 |
| Pittston, Pa. | 18,975 | ..... | ..... | ..... | 1 | ..... | ..... | ..... | ..... | ..... |
| Plainfield, N. J. | 24,330 | 15 | 1 | ..... | 15 | ..... | ..... | ..... | ..... | 2 |
| Plattsburg, N. Y. | 13,111 | 3 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Plymouth, Mass. | 14,001 | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Plymouth, Pa. | 19,439 | ..... | 4 | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Pocatello, Idaho | 12,806 | ..... | ..... | ..... | 1 | ..... | 1 | ..... | ..... | ..... |
| Pontiac, Mich. | 18,006 | 12 | 4 | ..... | 50 | ..... | ..... | ..... | ..... | ..... |
| Port Huron, Mich. | [1] 18,863 | 12 | 7 | ..... | 45 | ..... | 1 | ..... | ..... | ..... |
| Portland, Me. | 64,720 | 14 | 2 | ..... | ..... | ..... | 8 | ..... | ..... | 1 |
| Portland, Oreg. | 308,399 | 61 | 3 | ..... | ..... | ..... | 13 | ..... | 12 | 5 |
| Portsmouth, Va. | 40,693 | 21 | 1 | ..... | 1 | ..... | 1 | ..... | 2 | 2 |
| Pottstown, Pa. | 16,987 | ..... | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Pottsville, Pa. | 22,717 | ..... | 1 | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Poughkeepsie, N. Y. | 30,786 | 14 | 13 | 1 | ..... | ..... | 2 | ..... | 1 | 1 |
| Providence, R. I. | 259,895 | 69 | 18 | 4 | ..... | ..... | 18 | ..... | ..... | 5 |
| Pueblo, Colo. | 56,084 | 5 | 1 | 1 | ..... | ..... | 8 | ..... | ..... | 1 |
| Quincy, Ill. | 36,832 | 10 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |

[1] Population Apr. 15, 1910.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

### City Reports for Week Ended Nov. 29, 1919—Continued.

| City. | Population as of July 1, 1917 (estimated by U. S. Census Bureau). | Total deaths from all causes. | Diphtheria. | | Measles. | | Scarlet fever. | | Tuberculosis. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Quincy, Mass | 39,022 | 6 | 2 | ..... | ..... | ..... | 8 | ..... | 2 | ..... |
| Racine, Wis | 47,465 | 7 | ..... | ..... | ..... | ..... | 4 | ..... | ..... | ..... |
| Rahway, N. J | 10,361 | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Raleigh, N. C | 20,274 | 12 | 3 | 1 | ..... | ..... | 2 | ..... | ..... | 1 |
| Reading, Pa | 111,607 | ..... | 17 | ..... | ..... | ..... | 3 | ..... | ..... | ..... |
| Redlands, Calif | 14,573 | 2 | 1 | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Reno, Nev | 15,514 | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Richmond, Ind | 25,080 | 6 | 2 | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Richmond, Va | 158,702 | 60 | 8 | 1 | 1 | ..... | 10 | ..... | 27 | 7 |
| Riverside, Calif | 20,496 | 8 | 1 | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Roanoke, Va | 46,282 | 8 | 3 | ..... | 1 | ..... | 1 | ..... | ..... | ..... |
| Rochester, N. Y | 264,714 | 60 | 24 | 2 | 36 | ..... | 17 | ..... | 4 | 5 |
| Rockford, Ill | 56,739 | 15 | 4 | ..... | ..... | ..... | 2 | ..... | ..... | ..... |
| Rock Island, Ill | 29,452 | 6 | 1 | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Rocky Mount, N. C | 12,673 | 4 | 1 | ..... | ..... | ..... | ..... | ..... | 3 | ..... |
| Rome, N. Y | 24,259 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Rutland, Vt | 15,038 | 3 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sacramento, Calif | 68,984 | 24 | 1 | ..... | 1 | ..... | 4 | ..... | 1 | 2 |
| Saginaw, Mich | 56,469 | 16 | 1 | ..... | 8 | ..... | 1 | ..... | ..... | ..... |
| St. Cloud, Minn | 12,013 | ..... | 1 | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| St. Joseph, Mo | 80,498 | 28 | 4 | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| St. Louis, Mo | 768,630 | 161 | 123 | 9 | 30 | ..... | 18 | ..... | 50 | 9 |
| St. Paul, Minn | 252,465 | 64 | 26 | 2 | ..... | ..... | 10 | ..... | 13 | 3 |
| Salem, Mass | 49,346 | 13 | 12 | ..... | ..... | ..... | 4 | 1 | 1 | 2 |
| Salem, Oreg | 21,274 | 3 | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Salt Lake City, Utah | 121,623 | 25 | 3 | ..... | 1 | ..... | 1 | 1 | 2 | 2 |
| San Angelo, Tex | [1] 10,321 | 15 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 8 |
| San Antonio, Tex | 128,215 | 14 | 32 | 2 | ..... | ..... | 5 | ..... | 12 | 10 |
| San Bernardino, Calif | 17,616 | 7 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 |
| San Diego, Calif | 56,412 | 23 | 2 | 1 | ..... | ..... | 3 | ..... | 1 | 3 |
| Sandusky, Ohio | 20,226 | 6 | ..... | ..... | 1 | ..... | ..... | ..... | ..... | ..... |
| Sanford, Me | 11,217 | 0 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| San Francisco, Calif | 471,023 | 134 | ..... | 1 | ..... | 1 | ..... | ..... | ..... | 16 |
| San Jose, Calif | 39,810 | ..... | 1 | ..... | 2 | ..... | ..... | ..... | ..... | ..... |
| Santa Ana, Calif | 10,981 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | 2 | 1 |
| Santa Barbara, Calif | 15,360 | 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Saratoga Springs, N. Y | 13,839 | 7 | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Saugus, Mass | 10,210 | 3 | ..... | ..... | ..... | ..... | 2 | ..... | ..... | ..... |
| Savannah, Ga | 69,250 | 34 | 7 | ..... | ..... | ..... | 7 | ..... | 3 | 2 |
| Schenectady, N. Y | 103,774 | 13 | 1 | ..... | 1 | ..... | 2 | ..... | 6 | 1 |
| Scranton, Pa | 140,541 | ..... | 6 | ..... | 1 | ..... | 2 | ..... | 5 | ..... |
| Seattle, Wash | 366,445 | ..... | 9 | ..... | 33 | ..... | 8 | ..... | ..... | ..... |
| Shamokin, Pa | 21,274 | ..... | 1 | ..... | 8 | ..... | ..... | ..... | ..... | ..... |
| Sharon, Pa | 19,156 | ..... | 1 | ..... | ..... | ..... | 1 | ..... | 3 | ..... |
| Shelbyville, Ind | 11,201 | 3 | ..... | ..... | ..... | ..... | 1 | ..... | ..... | ..... |
| Shenandoah, Pa | 29,753 | ..... | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Sioux City, Iowa | 58,568 | ..... | 4 | ..... | ..... | ..... | 3 | ..... | ..... | ..... |
| Sioux Falls, S. Dak | 16,887 | 3 | ..... | ..... | 1 | ..... | 3 | ..... | ..... | ..... |
| Somerville, Mass | 88,618 | 14 | 2 | ..... | 1 | ..... | 6 | ..... | 1 | ..... |
| South Bend, Ind | 70,967 | 15 | 1 | ..... | 4 | ..... | 2 | 1 | ..... | ..... |
| Southbridge, Mass | 14,465 | 2 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Spartanburg, S. C | 21,985 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Spokane, Wash | 157,656 | ..... | 4 | ..... | ..... | ..... | 10 | ..... | ..... | ..... |
| Springfield, Mass | 108,668 | 29 | 5 | ..... | 1 | ..... | 15 | ..... | 4 | 4 |
| Springfield, Mo | 41,199 | 16 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 1 |
| Springfield, Ohio | 52,298 | 15 | ..... | ..... | 1 | ..... | ..... | ..... | ..... | ..... |
| Stamford, Conn | 31,810 | ..... | 1 | ..... | 13 | ..... | 1 | ..... | ..... | ..... |
| Staunton, Va | 11,823 | 8 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | 1 |
| Steelton, Pa | 15,759 | ..... | 4 | ..... | ..... | ..... | ..... | ..... | 2 | ..... |
| Steubenville, Ohio | 28,259 | 5 | 4 | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Stillwater, Minn | [1] 10,198 | 1 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | ..... |
| Stockton, Calif | 36,209 | 15 | ..... | ..... | 2 | ..... | 1 | ..... | ..... | ..... |
| Sunbury, Pa | 16,661 | ..... | 4 | ..... | ..... | ..... | 7 | ..... | ..... | ..... |
| Superior, Wis | 47,167 | 5 | 2 | ..... | 2 | ..... | 1 | ..... | ..... | ..... |
| Syracuse, N. Y | 158,559 | 34 | 11 | ..... | ..... | ..... | 13 | ..... | 5 | 1 |
| Tacoma, Wash | 117,446 | ..... | 8 | ..... | 2 | ..... | ..... | ..... | 1 | ..... |
| Taunton, Mass | 36,610 | 8 | 2 | ..... | ..... | ..... | ..... | ..... | 1 | ..... |
| Terre Haute, Ind | 67,361 | 24 | 1 | 1 | ..... | ..... | 1 | ..... | ..... | 1 |
| Tiffin, Ohio | 12,962 | 5 | ..... | ..... | ..... | ..... | ..... | ..... | ..... | 2 |
| Toledo, Ohio | 202,010 | 54 | 14 | 1 | 115 | ..... | 37 | 2 | 8 | 7 |

[1] Population Apr. 15, 1910.

## DIPHTHERIA, MEASLES, SCARLET FEVER, AND TUBERCULOSIS—Contd.

### City Reports for Week Ended Nov. 29, 1919—Continued.

| City. | Population as of July 1, 1917 (estimated by U. S. Census Bureau). | Total deaths from all causes. | Diphtheria. | | Measles. | | Scarlet fever. | | Tuberculosis. | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. | Cases. | Deaths. |
| Topeka, Kans. | 49,538 | 23 | 2 | 1 | 1 | | | | 6 | 3 |
| Traverse City, Mich. | 14,090 | 5 | | | | | | | | |
| Trenton, N. J. | 113,974 | 35 | 6 | | 4 | | 2 | | 5 | 3 |
| Trinidad, Colo. | 14,413 | | | | | | 1 | | | |
| Troy, N. Y. | 78,094 | 18 | | 1 | | | | | 3 | |
| Tucson, Ariz. | 17,324 | 7 | | | | | | | | |
| Tuscaloosa, Ala. | 10,824 | 3 | 2 | | | | | | 2 | |
| Uniontown, Pa. | 21,600 | | 1 | | | | 1 | | | |
| Vancouver, Wash. | 13,805 | | 9 | | | | 1 | | | |
| Waco, Tex. | 34,045 | 17 | 3 | | | | | | 1 | |
| Wakefield, Mass. | 12,947 | 2 | | | | | 1 | | | |
| Walla Walla, Wash. | 26,067 | | | | | | 1 | | | |
| Waltham, Mass. | 31,011 | 5 | 1 | | | | 1 | 1 | | |
| Warren, Pa. | 15,083 | | 2 | | | | 1 | | | |
| Washington, D. C. | 369,282 | 116 | 47 | 5 | 1 | | 9 | 1 | 18 | 7 |
| Washington, Pa. | 22,076 | | 1 | | | | | | | |
| Waterbury, Conn. | 89,201 | | 18 | 1 | 5 | | 11 | 1 | 1 | 2 |
| Watertown, Mass. | 15,188 | 2 | 1 | | | | | | 3 | 1 |
| Watertown, N. Y. | 30,404 | | 27 | | 1 | | 12 | | | |
| Wausau, Wis. | 19,666 | 2 | | | | | | | | |
| West Chester, Pa. | 13,403 | | 3 | | | | | | | |
| Westfield, Mass. | 18,769 | | 3 | | | | 1 | | | |
| West Hoboken, N. J. | 44,386 | 4 | | | | | 1 | | 2 | 1 |
| West New York, N. J. | 19,613 | 5 | | | | | 1 | | | |
| West Orange, N. J. | 13,964 | 0 | 4 | | | | 4 | | | |
| Wheeling, W. Va. | 43,657 | 7 | 3 | | | | 1 | | | |
| White Plains, N. Y. | 23,331 | 6 | | | 1 | | | | | 1 |
| Wichita, Kans. | 73,597 | 17 | 4 | | | | 5 | | 1 | |
| Wilkes Barre, Pa. | 78,334 | | 3 | | 1 | | 11 | | 2 | |
| Wilkinsburg, Pa. | 23,899 | | | | | | | | 1 | |
| Williamsport, Pa. | 34,123 | | 1 | | | | 5 | | 1 | |
| Wilmington, Del. | 95,369 | 23 | 3 | | | | 4 | | | |
| Wilmington, N. C. | 30,400 | 11 | 3 | | | | 8 | | 1 | |
| Winchester, Mass. | 10,812 | 4 | 1 | | | | | | | |
| Winona, Minn. | [1] 18,583 | 6 | | | 3 | | | | | 3 |
| Winston-Salem, N. C. | 33,136 | 18 | 6 | 1 | | | | | 1 | |
| Winthrop, Mass. | 13,105 | 1 | | | 1 | | | | | |
| Woburn, Mass. | 16,076 | 2 | | | | | | | | 1 |
| Woonsocket, R. I. | 45,365 | | 6 | | | | | | | |
| Worcester, Mass. | 166,106 | 45 | 4 | | 1 | | 19 | | 8 | 3 |
| Yonkers, N. Y. | 103,066 | 17 | 20 | 1 | 2 | | | | 1 | 1 |
| York, Pa. | 52,770 | | 12 | | 30 | | 31 | | 1 | |
| Youngstown, Ohio. | 112,282 | 24 | 5 | 1 | 2 | | 8 | | | 1 |
| Zanesville, Ohio. | 31,320 | 8 | | | 1 | | | | 1 | |

[1] Population Apr. 15, 1910.

# FOREIGN AND INSULAR.

## CHILE.

### Typhus Fever—Valparaiso.

Typhus fever was reported present at Valparaiso, Chile, November 11, 1919, with an average number of 10 new cases daily during the previous two weeks and a total from November 26, 1918, to November 11, of 897 cases with 203 fatalities.

## CHOSEN (KOREA).

### Cholera—Aug. 15–Oct. 19, 1919.

Cases of cholera and deaths therefrom were reported in Chosen (Korea) during the period from August 15 to October 19, 1919, as follows:

| Province. | Cases. | Deaths. | Province. | Cases. | Deaths. |
|---|---|---|---|---|---|
| Keiki | 178 | 112 | North Zenra | 1,057 | 531 |
| Kogen | 43 | 23 | South Chusei | 729 | 411 |
| Kokai | 3,256 | 1,780 | South Heian | 2,553 | 1,272 |
| North Chusei | 1 | ..... | South Kankyo | 631 | 305 |
| North Heian | 2,481 | 1,872 | South Zenra | 172 | 98 |
| North Kankyo | 440 | 216 | | | |
| North Keisho | 62 | 31 | Total | 11,603 | 6,051 |

### Influenza Epidemic—1918–1919.

The following table is taken from a translation of a report from the Chief of the Section of Foreign Affairs of Chosen (Korea) upon the prevalence of influenza during the epidemic. The disease is said to have invaded Chosen "about the middle of autumn ' of the year 1918. "It gradually grew worse and the latter part of October spread in various localities with the force of a storm and became malignant in nature, deaths increasing daily." The epidemic came to an end during March and April of 1919.

The table shows the number of reported cases of influenza and deaths therefrom during the epidemic. The population of Chosen in 1915 is said to have been 16,278,265.

| Province. | 1918 | | 1919 | |
|---|---|---|---|---|
| | Cases. | Deaths. | Cases. | Deaths. |
| Chusei, North | 287,303 | 4,704 | 600 | 100 |
| Chusei, South | 723,011 | 14,314 | 54,502 | 2,895 |
| Heian, North | 538,881 | 8,702 | ..... | ..... |
| Heian, South | 674,897 | 7,973 | 170 | ..... |
| Kankyo, North | 219,598 | 2,612 | 2,562 | 82 |
| Kankyo, South | 629,283 | 11,653 | ..... | ..... |
| Keiki | 582,725 | 12,617 | 52,629 | 2,957 |
| Keisho, North | 1,044,027 | 19,892 | ..... | ..... |
| Keisho, South | 628,871 | 14,965 | 100 | ..... |
| Kogen | 452,285 | 7,905 | 4,000 | 100 |
| Kokai | 593,552 | 13,841 | ..... | ..... |
| Zenra, North | 415,632 | 7,730 | 523 | ..... |
| Zenra, South | 766,628 | 13,619 | ..... | ..... |
| Total | 7,556,693 | 140,527 | ..... | ..... |

## INFLUENZA.

The following information was taken from reports received during the week ended December 19, 1919:

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Australia: | | | | |
| New South Wales— | | | | |
| Sydney | Sept. 28–Oct. 11 | ..... | 15 | Pneumonic. |
| Queensland— | | | | |
| Brisbane | Sept. 28–Nov. 1 | 224 | ..... | Do. |
| South Australia | Sept. 14–Oct. 18 | 718 | 55 | Entire State. |
| Victoria— | | | | |
| Melbourne | Sept. 1–7 | ..... | 10 | |
| Canada: | | | | |
| Manitoba— | | | | |
| Winnipeg | Nov. 16–22 | 2 | 2 | |
| Nova Scotia— | | | | |
| Halifax | Nov. 16–22 | 1 | ..... | |
| Ontario— | | | | |
| Hamilton | Nov. 30–Dec. 6 | 1 | ..... | |
| Ceylon | Aug. 1–31 | ..... | 59 | In 33 towns. |
| Chile: | | | | |
| Coquimbo | Oct. 19–Nov. 1 | ..... | 3 | |
| Punta Arenas | Oct. 5–18 | ..... | 5 | |
| Valparaiso | Oct. 26–Nov. 1 | ..... | 2 | Prevalent. |
| Denmark: | | | | |
| Copenhagen | Oct. 26–Nov. 1 | 108 | 1 | |
| France: | | | | |
| Paris | Oct. 5–Nov. 15 | ..... | 21 | |
| Great Britain: | | | | |
| Edinburgh | Oct. 18–25 | 1 | ..... | |
| London | Oct. 18–Nov. 1 | ..... | 40 | |
| Plymouth | Nov. 2–8 | ..... | 1 | |
| Greece: | | | | |
| Athens | Sept. 24–Oct. 13 | ..... | 18 | Broncho-pneumonia. |
| Spain: | | | | |
| Malaga | Nov. 1–10 | ..... | 1 | |
| Sweden: | | | | |
| Milan | Oct. 26–Nov. 8 | 38 | ..... | |
| Stockholm | Oct. 12–25 | 6 | ..... | |
| Switzerland: | | | | |
| Zurich | Sept. 28–Oct. 18 | 37 | ..... | |
| Union of South Africa: | | | | |
| East London | Sept. 7–Oct. 18 | 128 | ..... | European, 110; colored 18. Report for week ended Oct. 4 not received. |
| Port Elizabeth | Sept. 6–Oct. 25 | 59 | ..... | |
| Venezuela: | | | | |
| Maracaibo | Nov. 11–17 | ..... | ..... | Present. |
| On vessel: | | | | |
| S. S. Cadiz | Dec. 16 | 11 | ..... | At San Juan, Porto Rico. Vessel from Spanish port for New Orleans. |

# CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER.

## Reports Received During Week Ended Dec. 19, 1919.[1]

### CHOLERA.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| China: | | | | |
| Amoy | Oct. 5–11 | | 11 | |
| India: | | | | |
| Calcutta | Sept. 28–Oct. 11 | | 47 | |
| Madras | Oct. 12–18 | 1 | | |
| Japan: | | | | |
| Kobe | Oct. 18–Nov. 8 | 19 | 2 | |
| Philippine Islands: | | | | |
| Manila | Oct. 26–Nov. 1 | 10 | 4 | |
| Provinces | | | | Oct. 26–Nov. 1, 1919: Cases, 484; deaths, 352. |
| Albay | Oct. 26–Nov. 1 | 138 | 102 | |
| Ambos Camarines | do | 23 | 11 | |
| Antique | do | 4 | 4 | |
| Batangas | do | 18 | 21 | |
| Bohol | do | 7 | 6 | |
| Cagayan | do | 26 | 26 | |
| Capiz | do | 1 | 1 | |
| Cavite | do | 4 | 4 | |
| Cebu | do | 12 | 7 | |
| Ilocos Norte | do | 36 | 33 | |
| Ilocos Sur | do | 4 | 4 | |
| Iloilo | do | 26 | 12 | |
| Isabela | do | 3 | 3 | |
| Laguna | do | 9 | 4 | |
| Mindoro | do | 23 | 18 | |
| Mountain | do | 10 | 9 | |
| Occidental Negros | do | 54 | 33 | |
| Pangasinan | do | 6 | 4 | |
| Rizal | do | 12 | 4 | |
| Romblon | do | 10 | 2 | |
| Sorsogon | do | 23 | 16 | |
| Tarlac | do | 13 | 14 | |
| Tayabas | do | 22 | 14 | |
| Straits Settlements: | | | | |
| Singapore | Oct. 12–18 | 7 | 5 | |

### PLAGUE.

| | | | | |
|---|---|---|---|---|
| Algeria: | | | | |
| Algiers | Oct. 1–31 | 2 | | Dept. of Algiers, Oct. 21–31, 1919: One case. |
| British East Africa: | | | | |
| Kisumu | Oct. 14–20 | 4 | 4 | |
| Ceylon: | | | | |
| Colombo | Oct. 19–25 | 6 | 4 | |
| Egypt | | | | Jan. 1–Nov. 13, 1919: Cases, 798; deaths, 435. |
| Cities— | | | | |
| Alexandria | Nov. 5–11 | 1 | 1 | |
| Port Said | Sept. 10–23 | 5 | 4 | |
| Provinces— | | | | |
| Assiout | Nov. 7–12 | 16 | 7 | |
| India | | | | Sept. 28–Oct. 4, 1919: Cases, 2,097; deaths, 1,499. |
| Bombay | Oct. 12–18 | 1 | 1 | |
| Madras Presidency | Oct. 12–Nov. 1 | 279 | 189 | Oct. 13–19 missing. |
| Rangoon | Oct. 12–18 | 4 | 4 | |
| Peru: | | | | |
| Callao | | | | Jan. 1–June 30, 1919: Cases, 30; deaths, 18. |
| Senegal: | | | | |
| Dakar | Nov. 1–7 | | 28 | Dakar and vicinity, Oct. 25–Nov. 7, 1919: 109 deaths. |

### SMALLPOX.

| | | | | |
|---|---|---|---|---|
| Algeria: | | | | |
| Algiers | Oct. 1–31 | 1 | | Dept. of Algiers, Oct. 21–Nov. 10, 1919: Cases, 24. |
| Constantine | Nov. 1–10 | 4 | | Department. |
| Oran | do | 4 | | Do. |
| Austria | | | | July 27–Sept. 13, 1919: Cases, 34. |

[1] From medical officers of the Public Health Service, American consuls, and other sources.

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received During Week Ended Dec. 19, 1919—Continued.

#### SMALLPOX—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Brazil: | | | | |
| Bahia | Sept. 28-Oct. 25 | 803 | 406 | Nov. 1-30, 1919: Deaths, 1,189. Dec. 9, 1919: 926 cases in hospital. |
| Canada: | | | | |
| Nova Scotia— | | | | |
| Counties | Nov. 23-29 | | | Guys and Richmond, present. |
| Ontario | | | | Nov. 30-Dec. 6: Cases, 338. |
| Dysart | Nov. 30-Dec. 6 | 12 | | |
| Orillia | do | 21 | | |
| North Bay | Nov. 30-Dec. 6 | 1 | | |
| Toronto | do | 203 | | |
| Quebec— | | | | |
| Montreal | Nov. 22-29 | 1 | | |
| Quebec | Nov. 16-22 | 1 | | |
| Saskatchewan | | | | Nov. 29, 1919: Prevalent in some districts. |
| China: | | | | |
| Amoy | Oct. 11-27 | | 2 | |
| Chungking | Oct. 19-25 | | | Present. |
| Foochow | Oct. 12-25 | | | Do. |
| Nanking | Oct. 26-Nov. 1 | | | Do. |
| Colombia: | | | | |
| Barranquilla | Nov. 1 | | | 50 cases approximately. Mild. |
| Egypt: | | | | |
| Alexandria | Oct. 22-Nov. 11 | 20 | 9 | |
| Cairo | Sept. 10-30 | 28 | 12 | |
| Port Said | Sept. 17-23 | | 1 | |
| Germany | | | | July 18-Oct. 4, 1919: Cases, 245. |
| Hungary | June 23-29 | 17 | | |
| Do | June 30-July 20 | 5 | | |
| India: | | | | |
| Bombay | Oct. 12-18 | 2 | | |
| Calcutta | Sept. 28-Oct. 11 | | 10 | |
| Madras | Oct. 12-Nov. 1 | 15 | 8 | Oct. 19-25, 1919, missing. |
| Rangoon | Oct. 12-18 | 2 | 2 | |
| Italy: | | | | |
| Genoa | Oct. 27-Nov. 9 | 2 | | |
| Messina | Oct. 20-Nov. 9 | 24 | 27 | Province, 2 cases, Oct. 20-26, 1919. |
| Naples | Nov. 10-16 | 13 | 5 | |
| Mexico: | | | | |
| Mexico City | Oct. 26-Nov. 15 | 3 | | |
| San Antonio | Dec. 1 | | | In State of Chihuahua. Present. |
| Newfoundland: | | | | |
| St. Johns | Nov. 22-28 | 1 | | At outports, 15 cases: Also reported at 4 other localities. |
| Portugal: | | | | |
| Lisbon | Oct. 26-Nov. 8 | | 30 | |
| Spain: | | | | |
| Malaga | Nov. 1-10 | | 1 | |
| Valencia | Nov. 2-15 | 15 | 4 | |
| On vessel: | | | | |
| S. S. Cadiz | Dec. 16 | 3 | | At San Juan, Porto Rico. Vessel from Spanish port for New Orleans. |

#### TYPHUS FEVER.

| | | | | |
|---|---|---|---|---|
| Algeria: | | | | |
| Oran | Nov. 1-10 | 1 | | Department. |
| Austria | | | | July 13-Aug. 16, 1919: Cases, 27. |
| Vienna | Aug. 24-Sept. 13 | 3 | | |
| Chile: | | | | |
| Antofagasta | Nov. 10-16 | | | Present. |
| Coquimbo | Nov. 2-16 | | 2 | |
| Valparaiso | Oct. 25-Nov. 1 | 127 | 12 | Nov. 26, 1918-Nov. 11, 1919: Cases, 897; deaths, 203. |
| Egypt: | | | | |
| Alexandria | Oct. 22-Nov. 11 | 21 | 6 | |
| Cairo | Sept. 17-30 | 44 | 24 | |
| Germany | | | | Aug. 3-Oct. 4, 1919: 100 cases; civil population, 36; remainder in troops and prisoners of war. |
| Hungary | | | | June 30-July 13, 1919: Cases, 34. |
| Italy: | | | | |
| Venice | Nov. 3-9 | 8 | | |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received During Week Ended Dec. 19, 1919—Continued.

#### TYPHUS FEVER—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Japan: | | | | |
| Nagasaki | Oct. 27-Nov. 2 | 1 | | |
| Mexico: | | | | |
| Chihua ua | Nov. 10-16 | 1 | | |
| Mexico City | Oct. 26-Nov. 15 | 68 | | |
| San Luis Potosi | Nov. 23-29 | | | Present. |
| Portugal: | | | | |
| Lisbon | Oct. 26-Nov. 8 | | 2 | |
| Tunis: | | | | |
| Tunis | Nov. 9-15 | | 1 | |

#### YELLOW FEVER.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Brazil: | | | | |
| Bahia | Sept. 28-Oct. 4 | 1 | | |
| Mexico: | | | | |
| Merida | Dec. 8 | 3 | | From Muna. Total to Dec. 8, 1919: Cases, 42; deaths, 18, including Temax 4 cases and several from Muna. |
| Nicaragua: | | | | |
| Managua | Nov. 9-15 | 1 | | |
| Peru: | | | | |
| Paita | | | | July 3-Aug. 8, 1919: Cases, 11; deaths, 7. |
| Piura | | | | June 4-Sept. 13, 1919: Cases, 109; deaths, 31. |

### Reports Received from June 28 to Dec. 12, 1919.

#### CHOLERA.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Ceylon: | | | | |
| Colombo | Apr. 20-26 | 10 | | |
| Hambantota | July 25 | | | Outbreak 148 miles from Colombo. Spread to other places. |
| China: | | | | |
| Amoy | June 17-30 | | 25 | |
| Do | July 1-Oct. 20 | | 718 | |
| Antung | Aug. 5-Oct. 19 | 1,155 | 429 | |
| Canton | June 8-21 | 10 | 3 | |
| Do | June 29-Oct. 18 | 16 | 15 | Present in foreign section, island Shamien, Aug. 8. |
| Chefoo | Aug. 31-Sept. 6 | | | Daily average over 50 fatalities. |
| Foochow | July 10-26 | | | To July 16: Average of 100 fatalities daily. To July 26: Average of 30 cases daily. Five fatal cases European. July 27-Aug. 9: Epidemic. |
| Hankow | Aug. 31-Sept. 6 | 1 | | |
| Hongkong | July 13-Oct. 11 | 42 | 39 | |
| Mukden | Sept. 6-13 | | | Present. |
| Peking | Aug. 24-31 | | 1 | Foreign. |
| Shanghai | Aug. 6-31 | 7 | 1 | Choleraic disease prevalent from about July 15 with high mortality. |
| Swatow | May 25-June 28 | | 90 | |
| Do | June 29-Aug. 30 | | 120 | |
| Do | Sept. 7-13 | 5 | | |
| Tientsin | Aug. 10-Sept. 20 | 245 | 4 | Cases are from reports of physicians from the foreign concessions and native city. Deaths are for the British concession. |
| Tsinanfu | do | 32 | 3 | |
| Tsingtao | July 6-Sept. 21 | 140 | 83 | |
| Ungkung | Aug. 16 | | | Present: 30 miles from Swatow. |
| Chosen (Korea) | Aug. 15 | 3 | | Aug. 26: 6 cases. |
| Anyo | do | 1 | | Keiki Province. |
| Chemulpo | Sept. 1-30 | 1 | 1 | |
| New Wiju | Aug. 12 | 1 | | In a Korean arrived from Antung, China, where cholera was prevalent. |
| Seoul | Aug. 1-Sept. 30 | 2 | 6 | |
| Shingshu | Aug. 1-31 | 1 | | North Heian Province. |
| South Kankyo | Aug. 26 | | | Present. |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### CHOLERA—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Chosen (Korea)—Continued. | | | | |
| Provinces— | | | | |
| Keiki | Sept. 12–Oct. 1 | 96 | 72 | |
| Kogen | do | 4 | 3 | |
| Kokai | do | 1,628 | 892 | |
| North Heian | do | 867 | 446 | |
| North Kankyo | do | 253 | 112 | |
| North Keisho | do | 55 | 24 | |
| North Zenra | do | 184 | 76 | |
| South Chusei | do | 186 | 90 | |
| South Heian | do | 851 | 448 | |
| South Kankyo | do | 239 | 129 | |
| South Zenra | do | 8 | 5 | |
| India: | | | | |
| Bombay | Apr. 28–June 28 | 84 | 55 | |
| Do | June 29–Oct. 4 | 201 | 125 | Aug. 10–16, 1919: Cases, 14; deaths, 7. |
| Calcutta | May 4–June 21 | ..... | 617 | |
| Do | June 29–Oct. 18 | ..... | 166 | |
| Karachi | July 24–30 | 3 | 2 | |
| Madras | May 18–June 28 | 29 | 19 | Jan. 19–25, 1919: Cases, 113 deaths, 75. |
| Do | July 12–Oct. 11 | 58 | 35 | |
| Rangoon | Apr. 28–June 28 | 108 | 85 | |
| Do | June 29–Oct. 4 | 81 | 78 | |
| Indo-China: | | | | |
| Cochin-China— | | | | |
| Saigon | Apr. 21–June 29 | 386 | 272 | City and district. |
| Do | July 28–Sept. 28 | 50 | 45 | |
| Japan: | | | | |
| Kobe | Sept. 21–27 | 1 | 1 | |
| Pescadores Islands | July 14 | 40 | ..... | In 1 village. |
| Taiwan Island | ..... | ..... | ..... | July 2–Aug. 12, 1919: Cases, 398; |
| Do | Aug. 21–Oct. 20 | 2,328 | 1,740 | deaths, 245. |
| Keelung | Aug. 8 | ..... | ..... | Present in vinciity. |
| Taihoku | do | ..... | ..... | Present. |
| Tokyo | Aug. 18–24 | 4 | ..... | |
| Yokohama | Sept. 1–7 | 1 | ..... | Sept. 5, 1 case on fishing vessel near Haneda. |
| Java: | | | | |
| East Java | ..... | ..... | ..... | Apr. 2–June 20, 1919: Cases, 613; |
| Surabaya | Apr. 23–June 20 | 97 | 79 | deaths, 507. June 25–July 15, |
| Do | June 25–Aug. 19 | 17 | 15 | 1919: Cases, 16; deaths, 18. |
| Mid-Java | ..... | ..... | ..... | Mar. 28–June 27, 1919: Cases, |
| Samarang | Mar. 28–June 27 | 90 | 85 | 2,079; deaths, 1,650. |
| West Java | ..... | ..... | ..... | May 2–June 26, 1919: Cases, 100; |
| Batavia | May 2–June 5 | 12 | 5 | deaths, 67. July 18–Sept. 11, |
| Do | Aug. 2–28 | 6 | ..... | 1919: Cases, 29; deaths, 17. |
| Buitenzorg | Aug. 15–21 | 1 | ..... | |
| Tjiandjoer | do | 2 | 2 | |
| Manchuria: | | | | |
| Dairen | Sept. 9–29 | 192 | 143 | Present, Aug. 12. |
| Harbin | Aug. 7 | ..... | ..... | Present and in surrounding country. Aug. 14: Epidemic, with an estimated number of from 150 to 200 deaths. |
| Mesopotamia: | | | | |
| Basra | July 20–26 | 1 | ..... | |
| Persia: | | | | |
| Arbedil | May 2 | ..... | ..... | Present. |
| Enzeli | Apr. 23 | 1 | ..... | |
| Khorram-Ahab | May 3 | ..... | ..... | Outbreak. |
| Mianedge | Apr. 28 | ..... | ..... | Do. |
| Zindjan | Apr. 21–May 4 | ..... | 49 | |
| Philippine Islands: | | | | |
| Manila | Apr. 26–June 28 | 11 | 5 | |
| Do | June 29–Sept. 20 | 810 | 381 | |
| Provinces | ..... | ..... | ..... | May 4–24, 1919: Cases, 567; deaths, 383. |
| Batangas | May 4–24 | 25 | 23 | |
| Bulacan | do | 48 | 25 | |
| Cebu | do | 162 | 84 | |
| Laguna | do | 20 | 15 | |
| Mindora | do | 19 | 14 | |
| Misamis | do | 9 | 2 | |
| Pampanga | do | 166 | 131 | |
| Tayabas | do | 118 | 89 | |
| Provinces | ..... | ..... | ..... | June 1–28, 1919: Cases, 615; |
| Batangas | June 1–28 | 79 | 61 | deaths, 435. |
| Bohol | June 15–28 | 11 | 8 | |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### CHOLERA—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| **Philippine Islands—Continued.** | | | | |
| Provinces—Continued. | | | | |
| Bulacan | June 1–28 | 63 | 27 | |
| Cavite | June 8–28 | 23 | 14 | |
| Cebu | June 22–28 | 24 | 11 | |
| Ilocos Sur | June 15–21 | 1 | ..... | |
| Laguna | June 8–21 | 16 | 13 | |
| Nueva Ecija | June 1–28 | 60 | 39 | |
| Pampanga | ....do | 105 | 79 | |
| Pangasinan | June 8–28 | 113 | 81 | |
| Tayabas | ....do | 108 | 81 | |
| Union | June 22–28 | 7 | 7 | |
| Provinces | ..... | ..... | ..... | June 29–Oct. 18, 1919: Cases, 16,918; deaths, 12,223. |
| Albay | Aug. 31–Oct. 18 | 224 | 170 | |
| Ambos Camarines | July 27–Oct. 18 | 366 | 182 | |
| Bataan | July 6–Sept. 27 | 14 | 12 | |
| Batangas | June 29–Oct. 18 | 1,165 | 889 | |
| Bohol | ....do | 91 | 71 | |
| Bulacan | ....do | 500 | 369 | |
| Cagayan | Sept. 21–Oct. 18 | 40 | 36 | |
| Capiz | Aug. 24–Oct. 18 | 91 | 65 | |
| Cavite | June 29–Oct. 18 | 323 | 216 | |
| Cebu | ....do | 961 | 582 | |
| Davao | Sept. 7–Oct. 11 | 32 | 20 | |
| Ilocos Norte | Aug. 10–Oct. 18 | 744 | 553 | |
| Ilocos Sur | July 20–Oct. 18 | 1,369 | 923 | |
| Iloilo | July 6–Oct. 18 | 470 | 342 | |
| Isabela | Oct. 12–18 | 23 | 8 | |
| Laguna | July 6–Oct. 18 | 485 | 338 | |
| Leyte | Aug. 24–30 | 41 | 18 | |
| Mindoro | July 20–Oct. 18 | 228 | 113 | |
| Misamis | July 20–Aug. 23 | 11 | 8 | |
| Mountain | July 6–Oct. 18 | 158 | 82 | |
| Nueva Ecija | June 29–Sept. 27 | 561 | 391 | |
| Occidental Negros | July 27–Oct. 18 | 262 | 177 | |
| Oriental Negros | July 27–Sept. 27 | 174 | 100 | |
| Pampanga | June 27–Oct. 18 | 577 | 465 | |
| Pangasinan | ....do | 6,165 | 4,511 | |
| Rizal | July 13–Oct. 18 | 957 | 591 | |
| Sorsogon | July 27–Oct. 18 | 125 | 79 | |
| Tarlac | Sept. 11–Oct. 18 | 116 | 82 | |
| Tayabas | June 29–Oct. 11 | 439 | 357 | |
| Union | July 6–Oct. 18 | 1,317 | 974 | |
| Zambales | July 13–Oct. 4 | 34 | 23 | |
| **Siam:** | | | | |
| Bangkok | Apr. 12–June 28 | ..... | 697 | |
| Do | June 30–Oct. 4 | ..... | 80 | |
| **Straits Settlements:** | | | | |
| Singapore | July 14–Oct. 4 | 130 | 108 | Sept. 30: Present. |
| **Sumatra:** | | | | |
| Medan | June 29–Aug. 23 | 46 | 25 | Present in neighboring villages, June–July, 1919. |
| **Turkey:** | | | | |
| Constantinople | July 28 | ..... | ..... | Present. |
| **On vessel:** | | | | |
| Steamship | Aug. 17 | 1 | ..... | At Yokohama, from Shanghai Aug. 12, 1919. |

#### PLAGUE.

| | | | | |
|---|---|---|---|---|
| **Azores:** | | | | |
| Fayal Island | Sept. 6–19 | ..... | ..... | Present. |
| Terceira Island | ....do | ..... | ..... | Do. |
| **Brazil:** | | | | |
| Ceara | Aug. 3–Sept. 13 | 84 | 21 | |
| Pernambuco | May 26–June 1 | ..... | 1 | |
| **British East Africa:** | | | | |
| Kisumu | May 18–June 28 | ..... | ..... | Do. |
| Do | June 29–July 26 | ..... | ..... | Do. |
| Do | Aug. 3–6 | ..... | ..... | Present in vicinity. |
| Nairobi | June 15–21 | 1 | ..... | Native inspector's report, cases, 52; deaths, 52; native chiefs' reports, deaths, 27. |
| Do | Aug. 17–23 | 5 | 2 | Native inspectors' reports, cases, 25; deaths, 25; native chiefs' reports, deaths, 27. |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### PLAGUE—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Ceylon: | | | | |
| Colombo | Aug. 10–Oct. 11 | 10 | 9 | |
| Chile: | | | | |
| Antofagasta | Aug. 18–23 | 3 | ..... | |
| China: | | | | |
| Amoy | June 17–23 | ..... | 1 | |
| Do | Aug. 18–Sept. 13 | ..... | 1 | Present. |
| Canton | May 25–June 28 | ..... | ..... | Present. Apr. 27–May 10, 1919. |
| Foochow | May 18–24 | ..... | ..... | Present. Cases, 3; present May 24–June 7, 1919. |
| Hongkong | June 15–28 | 42 | 33 | |
| Do | June 29–Oct. 18 | 37 | 32 | |
| Ecuador: | | | | |
| Guayaquil | June 16–30 | 2 | 1 | |
| Posorja | June 1–30 | 3 | 1 | Bathing place, 65 kilometers from Guayaquil. |
| Egypt | | ..... | ..... | Jan. 1–Nov. 1, 1919: Cases, 781; deaths, 427. |
| Cities— | | | | |
| Alexandria | July 23–29 | 1 | ..... | |
| Do | Sept. 3–Oct. 21 | 10 | 2 | |
| Ismailia | July 29 | 2 | ..... | |
| Cairo | May 1 | ..... | 1 | |
| Kantarah | June 19–20 | 4 | 2 | Two European. Septicemic. |
| Do | July 31–Aug. 3 | 2 | 3 | |
| Port Said | May 1–June 28 | 9 | 10 | |
| Do | July 2–Oct. 27 | 22 | 18 | |
| Suez | June 5–11 | 3 | 3 | |
| Do | Nov. 4 | 2 | 2 | Indian. |
| Provinces— | | | | |
| Assiout | May 17–June 24 | 80 | 41 | |
| Do | July 3–Nov. 6 | 9 | 5 | |
| Beni-Suef | May 19–June 21 | 6 | 5 | |
| Fayoum | May 18–July 5 | 10 | 7 | |
| Girgeh | May 15–July 8 | 32 | 10 | |
| Menoufia | June 8–24 | 5 | 1 | |
| Minieh | June 25–May 24 | 29 | 11 | |
| Do | July 5–Oct. 28 | 5 | 2 | |
| France: | | | | |
| Marseille | Aug. 16–Sept. 2 | 5 | 3 | Total number of cases reported to Aug. 27, 11: deaths, 3. |
| Great Britain: | | | | |
| Liverpool | July 30 | 1 | 1 | In dock laborer. |
| Greece: | | | | |
| Athens | Oct. 20 | 5 | 3 | |
| Piræus | Oct. 23 | 2 | 1 | |
| Hawaii: | | | | |
| Ah Poi Camp | Aug. 9 | 1 | 1 | |
| Paauhau | July 19 | 1 | ..... | |
| Kukuiau | Sept. 23 | 3 | 3 | |
| Paauilo | Sept. 25 | 2 | 1 | |
| India | | ..... | ..... | Apr. 27–June 28, 1919: Cases, 8,645; deaths, 6,933. June 29–Oct. 11, 1919: Cases, 13,568; deaths, 10,039. |
| Bombay | Apr. 28–June 28 | 278 | 202 | |
| Do | June 29–Oct. 11 | 67 | 46 | |
| Calcutta | May 18–June 14 | ..... | 38 | |
| Do | June 28–Aug. 2 | ..... | 22 | |
| Karachi | May 18–June 28 | 145 | 132 | |
| Do | June 29–Oct. 11 | 65 | 55 | |
| Madras | | ..... | ..... | Jan. 19–25, 1919: Cases, 2; deaths, 1. |
| Madras Presidency | July 6–Aug. 16 | 381 | 237 | Jan. 19–25, 1919: Cases, 586; deaths, 347. May 30–June 5: Cases, 37; deaths, 28. |
| Do | Aug. 1–Oct. 25 | 623 | 416 | |
| Rangoon | Apr. 28–June 28 | 75 | 63 | |
| Do | July 6–Oct. 11 | 272 | 148 | |
| Indo-China: | | | | |
| Cochin China— | | | | |
| Saigon | Apr. 21–June 29 | 31 | 23 | City and district. |
| Do | July 28–Sept. 28 | 17 | 11 | |
| Japan: | | | | |
| Yokohama | June 9–15 | 1 | 1 | |
| Java: | | | | |
| East Java | | ..... | ..... | Apr. 8–June 28, 1919: Cases, 130; deaths, 130. July 23–Sept. 9, 1919: Cases, 53; deaths, 53. |
| Surabaya | Apr. 23–June 3 | 7 | 7 | |
| | July 30–Sept. 9 | 10 | 6 | |
| Temanggoeng | July 30–Sept. 2 | 43 | 43 | |
| Mid-Java | | ..... | ..... | Apr. 26–May 30, 1919: Cases, 23; deaths, 23. |
| Samarang | Apr. 26–June 27 | 26 | 26 | |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### PLAGUE—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Mesopotamia: | | | | |
| Bagdad | Apr. 19-June 20 | 346 | 269 | |
| Do | July 19-25 | 2 | 1 | |
| Do | Aug. 2-8 | 1 | | |
| Basra | May 3-10 | 108 | 89 | Including suburb of Ashar. Total from date of outbreak, March, 1919, to June 24, 1919. Cases, 396; deaths, 256. |
| Do | July 20-Oct. 24 | 4 | 1 | |
| Senegal: | | | | |
| Dakar | Sept. 1-30 | 1 | 1 | Reported present in vicinity. |
| Siam: | | | | |
| Bangkok | Apr. 27-May 17 | 2 | 2 | |
| Do | Sept. 28-Oct. 4 | | 1 | |
| Spain: | | | | |
| Barcelona | Sept. 15-Oct. 6 | 10 | | |
| Straits Settlements: | | | | |
| Singapore | Apr. 13-26 | 2 | 1 | |
| Do | July 14-Aug. 30 | 12 | 7 | |
| Syria: | | | | |
| Beirut | Oct. 11 | 24 | | Present. |
| Turkey: | | | | |
| Constantinople | Oct. 9 | | | Bubonic and pneumonic. |
| On vessels: | | | | |
| S. S. City of Sparta | Apr. 19-21 | 1 | 1 | From Bombay, Apr. 3, 1919: Case, a soldier at sea. |
| Do | May 13-17 | 1 | 1 | At Liverpool: Case, a native member of the crew. (Public Health Reports, June 27, 1919, p. 1473.) |
| S. S. Clan Lamont | Aug. 19 | 1 | | In dock in port of London, England. Vessel left Calcutta Mar. 23; arrived Buenos Aires May 9; sailed June 20; arrived Montvideo and sailed June 21; arrived at St. Vincent, Cape Verde Islands, July 10. |
| S. S. Framlington Court | July 25 | 1 | | From Alexandria, May 30: from Montreal, July 4; from Sydney, Nova Scotia, July 9; at Avonmouth, England, July 22, 1919. |
| S. S. Nagoya | Oct. 21-27 | 6 | | Vessel arrived Oct. 25 at port of London, England. Left Yokohama, Aug. 30. Oriental ports of call: Kobe, Shanghai, Hongkong, Penang, Singapore, and Colombo. In Egypt, Port Said. In Europe, Marseille, Gibraltar, and Plymouth. |
| S. S. Nankin | July 10-17 | 17 | 7 | Arrived at Port Said, Egypt, July 12, 1919. At sea from July 10 to 12, 9 cases; total landed at Port Said, 17. Vessel from London via Marseille; from Bombay, May 3, 1919. |

#### SMALLPOX.

| | | | | |
|---|---|---|---|---|
| Algeria: | | | | |
| Algiers | June 1-30 | 1 | 1 | |
| Do | July 1-Sept. 30 | 17 | 5 | |
| Arabia: | | | | |
| Aden | May 13-19 | | 1 | |
| Austria | | | | Mar. 9-Apr. 5, 1919; Cases, 92. |
| Salzburg | Mar. 9-Apr. 5 | 50 | | |
| Vienna | do | 17 | | |
| Azores: | | | | |
| St. Michaels | June 7-20 | 1 | | |
| Brazil: | | | | |
| Bahia | Apr. 20-June 7 | 4 | | |
| Do | Aug. 1-Oct. 23 | 1,203 | 500 | Epidemic outbreak. |
| Para | Sept. 21-27 | | 1 | |
| Pernambuco | May 4-25 | 5 | | Jan. 1-May 3, 1919; Cases, 10. |
| Rio de Janeiro | May 11-June 21 | 61 | 20 | |
| Do | June 30-Sept. 27 | 457 | 115 | |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### SMALLPOX—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| British East Africa: | | | | |
| Kisumu | Mar. 2-8 | 1 | 1 | |
| Mombasa | Mar. 1-June 7 | 275 | 37 | |
| Mtebba | Mar. 24-Apr. 6 | | | Present: In Uganda. |
| Nairobi | Mar. 1-May 31 | 3 | | |
| Do | Aug. 21-Sept. 13 | 18 | 2 | |
| Prison Island Quarantine Station. | | 1 | 1 | Zanzibar Island. In February, 1919. From vessel from India. |
| British West Indies: | | | | |
| Grenada | Sept. 27 | | | 1 case reported from Carriacou. |
| Canada: | | | | |
| British Columbia— | | | | |
| Vancouver | June 15-Sept. 11 | 8 | | |
| Manitoba— | | | | |
| Winnipeg | Nov. 2-15 | 2 | | |
| New Brunswick— | | | | |
| Campbellton | June 15-21 | 1 | | |
| Do | Aug. 1-Oct. 31 | 2 | | |
| Moncton | July 6-12 | 1 | | |
| St. John | July 27-Aug. 2 | 1 | | |
| Nova Scotia— | | | | |
| Cities— | | | | |
| Bridgenorth | July 27-Aug. 9 | | | A few cases; mild. |
| Halifax | June 29-Sept. 20 | 65 | | June 15-28, 1919; Cases, 61. |
| Do | Oct. 19-Nov. 1 | 3 | | |
| Sydney | June 8-21 | 3 | | |
| Do | Aug. 1-Oct. 11 | 5 | | |
| Counties— | | | | |
| Antigonish | June 28-Nov. 22 | | | Present. |
| Colchester | Aug. 3-Nov. 1 | | | Do. |
| Cumberland | Aug. 30-Oct. 11 | | | Do. |
| Guysborough | Aug. 18-30 | | | Do. |
| Do | Sept. 21-Nov. 1 | | | Do. |
| Halifax | June 28-Nov. 8 | | | Do. |
| Hants | June 28-Nov. 22 | | | Do. |
| Kings | Aug. 10-Oct. 11 | | | Do. |
| Lunenburg | July 13-Aug. 16 | | | Do. |
| Pictou | July 20-Oct. 18 | | | Present. Also on Cape Breton Island, July 27-Aug. 21. |
| Richmond | Aug. 24-Nov. 22 | | | Present. |
| Shelbourne | Aug. 24-30 | | | Do. |
| Victoria | Aug. 3-9 | | | Do. |
| Ontario— | | | | |
| Province | | | | May 1-June 30, 1919: Cases, 166; deaths, 4. July 1-31, 1919: Cases, 51; death, 1. |
| Fort William | Nov. 22-29 | 1 | | |
| Hamilton | June 29-Nov. 29 | 5 | | |
| Harwich | May 1-31 | 14 | 2 | Township in Kent County. |
| Niagara | Nov. 16-22 | 2 | | |
| North Bay | Sept. 21-Nov. 22 | 2 | | |
| Ottawa | June 15-21 | 2 | | |
| Do | June 29-Sept. 6 | 3 | | |
| Peterborough | June 15-21 | 4 | | |
| Do | Oct. 26-Nov. 3 | 22 | 9 | |
| Prescott | Nov. 12-29 | 1 | | |
| Toronto | Aug. 31-Nov. 22 | 455 | | Outbreak in first half of November, 1919: Cases, about 368. |
| Walpole Island | May 1-31 | 42 | | Kent County, Island in Lake St. Clair. Among Indians. |
| Prince Edward Island— | | | | |
| Charlottetown | July 16-Nov. 5 | 9 | | |
| Quebec | | | | In Bonaventure and Gaspe Counties, Aug. 1-31, 1919: 2 cases. |
| Montreal | June 8-28 | 18 | | |
| Do | Aug. 24-Nov. 29 | 24 | | |
| Quebec | June 8-28 | 18 | | June 8-14, 1919: 1 case on incoming vessel. |
| Do | July 5-Nov. 15 | 44 | | |
| Restigouche | June 15-July 31 | 40 | | Estimated. On Indian reserve. |
| Saskatchewan— | | | | |
| Regina | Oct. 26-Nov. 1 | 1 | | |
| Ceylon: | | | | |
| Colombo | May 1-31 | 4 | | June 17-23. |
| Do | July 13-Aug. 23 | 3 | 3 | |
| China: | | | | |
| Amoy | May 20-June 16 | | 13 | |
| Do | July 8-Oct. 20 | | | Present. |
| Do | July 29-Oct. 6 | | 5 | |
| Canton | May 18-June 21 | | | Do. |
| Do | July 1-Oct. 18 | | | Do. |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### SMALLPOX—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| China—Continued. | | | | |
| Chefoo | June 8-21 | | | Present. |
| Chungking | May 4-June 28 | | | Do. |
| Do | June 29-Oct. 18 | | | Do. |
| Foochow | Jan. 12-June 28 | | | Do. |
| Do | June 29-Oct. 4 | | | Do. |
| Hankow | Aug. 31-Sept. 6 | 3 | | |
| Hongkong | May 18-June 28 | 5 | 5 | Do. |
| Do | Aug. 31-Sept. 13 | | | Do. |
| Nanking | May 25-June 28 | | | Do. |
| Do | June 29-Oct. 25 | | | Do. |
| Chosen (Korea): | | | | |
| Chemulpo | Apr. 1-June 30 | 22 | 4 | |
| Do | July 1-31 | 1 | 1 | |
| Fusan | ....do | 336 | 96 | |
| Do | ....do | 4 | | |
| Seoul | Apr. 1-May 31 | 3 | 1 | |
| Do | Aug. 1-31 | 1 | | |
| Cuba: | | | | |
| Habana | Aug. 2-Oct. 23 | 35 | | First case from S. S. Venezia from Spanish ports; arrived Habana about July 20, 1919. |
| Santiago | Nov. 10-20 | 1 | | |
| Czecho-Slovakia: | | | | |
| Prague | May 18-June 21 | 11 | 2 | |
| Denmark: | | | | |
| Copenhagen | | | | Apr. 2-26, 1919: Cases, 11. |
| Egypt: | | | | |
| Alexandria | May 14-June 24 | 233 | 95 | |
| Do | June 25-Oct. 21 | 257 | 132 | |
| Cairo | Jan. 2-May 20 | 544 | 124 | |
| Do | June 18-Sept. 9 | 422 | 161 | |
| Port Said | July 9-Sept. 9 | 5 | | |
| Finland | | | | Apr. 16-June 30, 1919: Cases, 469. |
| Helsingfors | Aug. 16-Sept. 15 | 6 | | July 1-5, 1919: Cases, 44. |
| Provinces— | | | | Aug. 1-31, 1918: Cases, 8. |
| Abo Och Bjorneborg | Apr. 16-June 30 | 13 | | |
| Kuopio | ....do | 88 | | |
| Do | July 1-15 | 1 | | |
| Finland | Apr. 16-June 30 | 17 | | |
| St. Michael | ....do | 73 | | |
| Do | July 1-15 | 2 | | |
| Tavastehus | Apr. 16-June 30 | 63 | | |
| Do | July 1-15 | 5 | | |
| Vasa | Apr. 16-June 14 | 12 | | |
| Viborg | Apr. 16-June 30 | 340 | | |
| Do | July 1-15 | 36 | | |
| France: | | | | |
| Havre | May 23-30 | 1 | | |
| Marseille | May 1-June 30 | | 5 | |
| Paris | May 11-June 28 | 17 | 28 | |
| Do | June 20-Oct. 25 | 70 | 15 | |
| Gibraltar | June 28-Aug. 16 | 1 | 2 | One from Bay. |
| Great Britain: | | | | |
| Bradford | Sept. 21-27 | 3 | | |
| Cardiff | June 15-Sept. 20 | 10 | | |
| Dundee | June 1-7 | 1 | | |
| Do | Aug. 18-23 | 9 | 6 | |
| Glasgow | June 8-21 | 5 | | |
| Liverpool | June 22-28 | 1 | | |
| Do | June 20-Sept. 6 | 6 | | |
| London | May 25-June 28 | 13 | | |
| Do | June 20-Aug. 9 | 18 | 2 | |
| Manchester | July 27-Sept. 6 | 11 | | |
| Greece: | | | | |
| Drama | Sept. 29-Oct. 25 | | | Present. |
| Saloniki | May 15-June 28 | | 48 | |
| Do | June 29-Oct. 5 | | 73 | |
| India: | | | | |
| Bombay | Apr. 28-June 28 | 712 | 283 | |
| Do | July 6-Oct. 11 | 111 | 68 | |
| Calcutta | May 4-June 21 | | 444 | |
| Do | June 29-Sept. 27 | | 176 | |
| Karachi | May 4-June 21 | 28 | 17 | |
| Do | Sept. 21-Oct. 4 | 19 | 19 | |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### SMALLPOX—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| India—Continued. | | | | |
| Madras | May 18-June 28 | 171 | 55 | Jan. 19-25, 1919: Cases, 29; deaths, 25. |
| Do | July 6-Oct. 11 | 327 | 147 | |
| Rangoon | Apr. 28-June 28 | 188 | 92 | |
| Do | July 6-Oct. 11 | 99 | 38 | |
| Indo-China: | | | | |
| Cochin China— | | | | |
| Saigon | Apr. 21-May 18 | 11 | 4 | City and district. |
| Do | Aug. 11-Sept. 28 | 9 | 2 | |
| Italy: | | | | |
| Genoa | July 7-Oct. 19 | 25 | ..... | |
| Leghorn | June 16-29 | 2 | ..... | |
| Messina | June 1-21 | 13 | ..... | Province, June 8-21, 1919: Cases, 23; deaths, 3. |
| Do | June 29-Oct. 19 | 634 | 276 | |
| Milan | Mar. 1-June 30 | 50 | 8 | |
| Do | July 1-Aug. 31 | 46 | 4 | |
| Milazzo | June 1-7 | 1 | 1 | |
| Naples | June 2-29 | 103 | 91 | |
| Do | June 30-Aug. 17 | 122 | 119 | |
| Palermo | May 2-June 20 | 39 | 5 | |
| Do | June 28-July 5 | 37 | 9 | |
| Trieste | Sept. 28-Nov. 8 | 2 | ..... | |
| Turin | May 18-June 29 | 5 | 1 | |
| Do | July 6-Sept. 7 | 8 | ..... | |
| Venice | May 26-June 1 | 2 | ..... | |
| Japan: | | | | |
| Kobe | May 4-Sept. 7 | 173 | 78 | |
| Nagoya | June 1-7 | 1 | 1 | |
| Taiwan Island | May 21-Aug. 12 | 20 | 6 | Entire island. |
| Tokyo | May 1-June 5 | 2 | ..... | |
| Yokohama | May 26-June 1 | 1 | ..... | |
| Java: | | | | |
| East Java | ..... | ..... | ..... | Apr. 9-June 3, 1919: Cases, 3. July 9-Sept. 9, 1919: Cases, 3. |
| Surabaya | May 27-June 3 | 2 | ..... | |
| Do | July 30-Sept. 2 | 6 | ..... | |
| Mid-Java | Apr. 26-May 16 | 7 | ..... | |
| West Java | ..... | ..... | ..... | May 2-June 26, 1919: Cases, 615; deaths, 148. June 27-Sept. 25, 1919: Cases, 433; deaths, 93. |
| Batavia | Apr. 18-June 5 | 4 | 1 | |
| Do | July 25-Sept. 25 | 68 | 16 | |
| Buitenzorg | Aug. 15-21 | 5 | ..... | |
| Garoet | ....do | 41 | 6 | |
| Meester Cornelis | Aug. 15-28 | 11 | 4 | |
| Pandeglang | Aug. 22-28 | 4 | ..... | |
| Tasikamalaya | Aug. 15-21 | 3 | 3 | |
| Malta | May 1-31 | 1 | ..... | |
| Do | Aug. 1-Sept. 30 | 5 | 1 | |
| Manchuria: | | | | |
| Dairen | May 13-June 2 | 3 | 2 | |
| Mukden | July 6-Sept. 13 | ..... | ..... | Present. |
| Mesopotamia: | | | | |
| Bagdad | May 20-30 | 1 | ..... | |
| Mexico: | | | | |
| Cananea | Feb. 1-28 | 7 | ..... | |
| Do | Apr. 1-30 | 1 | ..... | State of Sonora. |
| Guadalajara | June 1-30 | 1 | ..... | |
| Mexico City | June 1-28 | 20 | 1 | |
| Do | June 29-Oct. 25 | 9 | ..... | |
| Piedras Negras | June 22-28 | 2 | 2 | |
| Salina Cruz | Sept. 1-15 | 1 | ..... | |
| Do | Sept. 17-30 | 2 | ..... | |
| San Jeronimo | June 17-30 | 5 | ..... | |
| San Luis Potosi | Sept. 7-13 | ..... | 1 | |
| Do | Sept. 21-Nov. 15 | ..... | 6 | |
| Tehuantepec | Sept. 16 | 2 | ..... | |
| Vera Cruz | July 6-19 | 4 | ..... | In State of Oaxaca. |
| Do | June 29 | 4 | 9 | |
| Newfoundland: | | | | |
| St. Johns | Jan. 4-June 27 | 67 | ..... | Jan. 4-June 27, 1919: Outports, 412 cases. June 28-Sept. 5, 1919: Cases, 61. Sept. 20-Nov. 21, 1919: Cases, 15. |
| Do | June 28-Nov. 21 | 22 | ..... | Present on Pilleys Island in October, 1919. At Shoal Arm, Oct. 24 |
| Palestine: | | | | |
| Jaffa | Jan. 16-Feb. 7 | 2 | ..... | |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received From June 28 to Dec. 12, 1919—Continued.

#### SMALLPOX—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Philippine Islands: | | | | |
| Manila | May 11-17 | 1 | | |
| Portugal: | | | | |
| Lisbon | July 26-Oct. 25 | 85 | 25 | |
| Oporto | June 1-28 | 25 | 33 | |
| Do | June 29-Oct. 25 | 82 | 50 | |
| Portuguese East Africa: | | | | |
| Lourenco Marques | Apr. 1-May 31 | 2 | 1 | |
| Russia: | | | | |
| Riga | June 1-30 | | | Present. |
| Do | July 1-31 | 203 | | |
| Siberia: | | | | |
| Vladivostok | June 8-30 | 45 | | |
| Do | July 1-31 | 12 | 3 | |
| South Africa: | | | | |
| Johannesburg | Aug. 1-31 | 4 | 1 | |
| Spain: | | | | |
| Almeria | May 18-June 30 | 68 | 6 | |
| Barcelona | May 15-June 19 | 3 | 6 | |
| Do | June 26-Oct. 21 | | 51 | |
| Bilbao | May 1-10 | 1 | | |
| Do | Aug. 1-Sept. 20 | 6 | | |
| Cadiz | Apr. 1-May 31 | | 5 | |
| Do | July 1-31 | | 2 | |
| Madrid | May 1-31 | 3 | | |
| Do | Aug. 1-31 | 2 | | |
| Malaga | Aug. 1-Oct. 31 | | 2 | |
| Seville | do | | 1 | |
| Valencia | May 11-June 29 | 233 | 15 | |
| Do | July 14-Oct. 25 | 109 | 18 | |
| Vigo | Apr. 12 | 2 | | From vessel, Mar. 22, 1919: Present in villages in vicinity. |
| Do | July 6-Nov. 1 | 38 | 14 | |
| Straits Settlements: | | | | |
| Singapore | Mar. 24-May 17 | 6 | 3 | |
| Do | July 8-27 | 5 | 1 | |
| Sumatra: | | | | |
| Belawan | Aug. 26-Sept. 4 | | | Present. |
| Medan | June 26-Aug. 23 | 2 | | June 22-July 12, 1919: Present in surrounding country. |
| Tunis: | | | | |
| Tunis | June 15-28 | 2 | 1 | |
| Do | June 29-July 5 | 3 | 2 | |
| Union of South Africa: | | | | |
| Johannesburg | May 1-31 | 1 | | |
| On vessels: | | | | |
| S. S. Eastern | Apr. 25-26 | 2 | 1 | Death at sea. Second case landed at Woodmans Quarantine Station, Fremantle, Australia, Apr. 29. Vessel from England via Egypt and Colombo. |
| S. S. Glenaffric | Oct. 10 | 1 | | At Trinidad, West Indies. From Bahia. In person embarked at Bahia. |
| S. S. Karoa | Apr. 19 | 1 | | Landed at Colombo Vessel from the United Kingdom via Egypt and Colombo. |
| S. S. Khyber | Apr. 10-May 4 | 4 | | From Liverpool, via Port Said, Suez, and Colombo. One case landed at Port Said, Apr. 10; 2 cases at Colombo, Apr. 22; 1 at quarantine, Fremantle, Australia, May 4, 1919. |
| S. S. Rio Negro | Oct. 4 | 1 | | At Port of Spain, Trinidad, from Bahia. From Montevideo, Aug. 31; Santos, Sept. 8; Rio de Janeiro, Sept 15. Arrived Port of Spain, Oct. 4, 1919 |
| S. S. War Armour | | 7 | | En route from Naples to Aden and Colombo. Vessel arrived at Fremantle, Australia, June 22, 1919: Cases landed at Colombo. |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received From June 28 to Dec. 12, 1919—Continued.

#### TYPHUS FEVER.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Algeria: | | | | |
| Algiers | May 1-June 30 | 82 | 11 | |
| Do | July 1-Aug. 31 | 4 | ..... | |
| Austria | ..... | ..... | ..... | Mar. 23-Apr. 5, 1919: Cases, 118. |
| Vienna | Mar. 23-Apr. 5 | 9 | ..... | |
| Brazil: | | | | |
| Rio de Janeiro | May 4-June 21 | 3 | ..... | Mar. 30-Apr. 5, 1919: Cases, 2. |
| Do | July 6-Sept. 20 | 9 | ..... | |
| Chile: | | | | |
| Antofagasta | Oct. 20-Nov. 2 | 18 | ..... | |
| Santiago de Chile | Jan. 12-Oct. 31 | 5,969 | 120 | Nov. 1-11, 1919: Cases, 397; deaths, 99. |
| Valparaiso | Oct. 12-25 | ..... | 18 | |
| China: | | | | |
| Antung | July 6-Aug. 12 | 4 | ..... | |
| Changsha | May 11-17 | 1 | 1 | |
| Chosen (Korea): | | | | |
| Chemulpo | Apr. 1-June 30 | 85 | 10 | |
| Do | July 1-31 | 1 | ..... | |
| Fusan | May 1-June 30 | 5 | 2 | |
| Do | July 1-31 | 1 | ..... | |
| Seoul | Apr. 1-June 30 | 147 | 28 | |
| Do | July 1-31 | 1 | ..... | |
| Colombia: | | | | |
| Barranquilla | July 12-19 | ..... | 1 | |
| Czecho-Slovakia: | | | | |
| Prague | May 18-24 | 1 | ..... | |
| Egypt: | | | | |
| Alexandria | May 14-June 29 | 474 | 248 | |
| Do | June 28-Oct. 21 | 485 | 158 | |
| Cairo | Jan. 2-Sept. 9 | 4,148 | 2,296 | |
| Port Said | Jan. 9-June 10 | 11 | 7 | |
| Do | July 16-Sept. 9 | 11 | 5 | |
| Finland | ..... | ..... | ..... | Apr. 16-June 30, 1919: Cases, 25. |
| Helsingfors | Sept. 1-15 | 1 | ..... | |
| Provinces— | | | | |
| Abo Och Bjorneborg | May 15 | 1 | ..... | |
| Nyland | Apr. 16-May 31 | 4 | ..... | |
| St. Michael | Apr. 16-June 30 | 15 | ..... | |
| Viborg | Apr. 16-June 14 | 3 | ..... | |
| Germany | Jan. 12-Feb. 22 | 344 | ..... | Military. |
| Do | Feb. 22-Mar. 22 | 220 | ..... | Civil. |
| Do | Mar. 23-Apr. 12 | 333 | ..... | Civil, military, prisoners of war, deserters. |
| Do | Apr. 13-26 | 62 | ..... | 55 cases among German troops and among prisoners of war. |
| Do | Apr. 27-May 17 | 126 | ..... | Of these, 90 among Polish workmen and Russians; during same period, 105 cases among German troops and prisoners of war. In addition, Apr. 1-26, 41 cases were notified among Polish workmen and refugees. |
| Great Britain: | | | | |
| Glasgow | June 8-July 5 | 13 | 2 | |
| Dublin | Aug. 17-30 | 3 | ..... | June 15-21, 1919: 1 case. |
| Dundee | June 30-July 5 | 3 | ..... | |
| Greece: | | | | |
| Athens | July 21-Oct. 6 | ..... | 2 | |
| Saloniki | May 15-June 14 | ..... | 5 | |
| Do | July 6-Aug. 23 | ..... | 18 | |
| Hungary | ..... | ..... | ..... | Feb. 24-May 9, 1919: Cases, 258. |
| Budapest | Sept. 24-May 9 | 124 | 6 | |
| Dubreczin | ....do | 42 | ..... | |
| India: | | | | |
| Rangoon | July 1-31 | ..... | 21 | |
| Italy | ..... | ..... | ..... | Apr. 28-June 8, 1919: Cases, 3,470; Austrian prisoners, 3,321; Italian soldiers, 82; civil population, 67. |
| Do | ..... | ..... | ..... | June 9-15, 1919: Present in 14 Provinces, with 761 cases, viz, Austrian prisoners, 631; Italian soldiers, 23; Roumanian soldiers, 97; civil population, 10. |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### TYPHUS FEVER—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Italy | | | | June 16–22, 1919: Present in 12 Provinces, with 127 cases, viz, Austrian prisoners, 102; Italian soldiers, 8; civil population, 12; Roumanian soldiers, 5. |
| Do | | | | June 23–29, 1919: Present in 14 Provinces, with 117 cases, viz, Austrian prisoners, 107; Italian soldiers, 3; civil population, 7. |
| Do | | | | July 6–13, 1919: Cases, 14, occurring in 7 Provinces—7 prisoners of war, 5 civilians, 2 Italian soldiers. |
| Do | | | | July 21–27, 1919: Cases, 5, occurring in 4 Provinces—1 Austrian prisoner; 4 civil population. |
| Do | | | | July 28–Aug. 3, 1919: 6 cases in 3 Provinces; civil population. |
| Do | | | | Sept. 8–21, 1919: Cases, 8, occurring in 5 Provinces among the civil population. |
| Genoa | June 25–July 1 | 91 | | |
| Naples | May 12–June 22 | 50 | 16 | |
| Do | June 30–Aug. 17 | 17 | 6 | |
| Palermo | July 21–27 | 2 | | |
| Venice | Apr. 27–June 14 | 58 | 9 | |
| Do | June 30–Sept. 14 | 42 | 6 | |
| Trieste | June 6–12 | 1 | | |
| Japan: | | | | |
| Nagasaki | June 16–July 1 | 3 | | |
| Do | July 14–Oct. 12 | 15 | 7 | |
| Java: | | | | |
| East Java— | | | | |
| Passoeroean | Aug. 6–12 | 2 | | |
| Do | Aug. 20–Sept. 2 | 2 | 1 | |
| Surabaya | July 20–Aug. 19 | 5 | 1 | |
| West Java— | | | | |
| Bandoeng | Aug. 15–21 | 5 | | |
| Batavia | Aug. 8–14 | 12 | 2 | |
| Buitenzorg | Aug. 22–28 | 3 | | |
| Mesopotamia: | | | | |
| Bagdad | Apr. 19–June 6 | 34 | 22 | |
| Do | July 26–Aug. 15 | 3 | | |
| Mexico: | | | | |
| Guadalajara | May 1–31 | 1 | | |
| Do | Sept. 24–30 | 3 | | |
| Mexico City | May 4–June 28 | 216 | | |
| Do | June 29–Oct. 25 | 391 | | |
| San Luis Potosi | July 27–Nov. 22 | | | Present and in surrounding country. |
| Newfoundland: | | | | |
| St. Johns | June 21–27 | 1 | | From vessel. |
| Netherlands: | | | | |
| Rotterdam | Oct. 5–11 | 1 | | |
| Palestine: | | | | |
| Jaffa | | | | Oct. 22–Dec. 22, 1918: Cases, 8; deaths, 3. |
| Portugal: | | | | |
| Lisbon | June 22–28 | 1 | | |
| Do | July 26–Aug. 23 | 13 | 2 | |
| Oporto | June 1–15 | 52 | | |
| Do | June 30–Oct. 11 | 81 | 42 | |
| Russia: | | | | |
| Archangel | May 15–June 1 | 6 | 1 | |
| Riga | May 1–June 30 | 2,82[illegible] | | |
| Do | July 1–31 | 1,247 | | |
| Siberia: | | | | |
| Vladivostok | June 9–30 | 104 | 9 | |
| Do | July 1–31 | 5 | 13 | |
| Spain: | | | | |
| Barcelona | May 15–21 | | 1 | |
| Madrid | May 1–31 | | 1 | |
| Do | Aug. 1–Sept. 30 | 1 | 3 | |
| Sumatra: | | | | |
| Medan | June 26–Aug. 23 | 25 | 4 | |

## CHOLERA, PLAGUE, SMALLPOX, TYPHUS FEVER, AND YELLOW FEVER—Continued.

### Reports Received from June 28 to Dec. 12, 1919—Continued.

#### TYPHUS FEVER—Continued.

| Place. | Date. | Cases. | Deaths. | Remarks. |
|---|---|---|---|---|
| Switzerland: | | | | |
| Zurich | Sept. 7-20 | 9 | | |
| Syria: | | | | |
| Mersina | Feb. 13-19 | | | Present. |
| Smyrna | Sept. 20 | | | Do. |
| Tunis: | | | | |
| Tunis | May 24-June 21 | 3 | 1 | |
| Do | July 20-Oct. 25 | 5 | 4 | |

#### YELLOW FEVER.

| | | | | |
|---|---|---|---|---|
| Brazil: | | | | |
| Bahia | Apr. 12-June 14 | 48 | 15 | Jan. 12-May 17, 1919: Cases, 43; deaths, 25. July 29, 1919, reported seriously prevalent in States of Bahia and Pernambuco. |
| Do | July 6-Sept. 6 | 25 | 5 | |
| Pernambuco | Sept. 15-21 | 1 | 1 | |
| Santos | Aug. 18-24 | | 1 | |
| Canal Zone | Aug. 10-12 | 1 | 1 | Patient at Corinto, Nicaragua, at quarantine from S. S. Salvador. |
| Ecuador: | | | | |
| Guayaquil | May 1-31 | 1 | 1 | July 31, 1919: At Leon, Nicaragua; Aug. 2, 1919. Embarked Aug. 6 at Corinto. |
| Naranjito | May 1-June 15 | 2 | 1 | |
| Honduras: | | | | |
| Amapala | Aug. 28-Sept. 6 | 9 | 1 | |
| Mexico: | | | | |
| Merida | June 30-Nov. 15 | 39 | 18 | Including 4 cases brought from Temax and cases from Muna. |
| Temax | Sept. 14-20 | 4 | 2 | |
| Nicaragua: | | | | |
| Chinandega | Oct. 16 | | | Present. |
| Leon | Sept. 1-Nov. 1 | | | Do. |
| Managua | Oct. 16 | | | Do. |
| Peru: | | | | |
| Department of Piura— | | | | |
| Paita | July 10-22 | 8 | 5 | June 1-Aug. 12, 1912: Cases, 10; deaths, 6. |
| Piura | do | 46 | 10 | June 1-Aug. 12, 1919: Cases, 90; deaths, 20. |
| Salvador: | | | | |
| La Union | July 6 | 2 | | |
| St. Miguel | June 24-July 6 | 4 | | 75 miles from city of San Salvador. |
| San Salvador | do | 1 | 1 | |